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ABSTRACT

Compiled are keynote address, minutes of the meetings, committee reports, and a list of the 78 participants who attended the thirteenth Lake Okoboji Educational Media Leadership Conference. The keynote address advocated that the instructional technologist should employ the systems approach in making curriculum planning decisions for shifting the function of instructional media from a supplementary role to an integrated one in the total instructional system. Six study committees were formed to explore the following topics: (1) components and types of instructional systems in use, (2) redefining roles for a systems approach, (3) climate of acceptance of a new instructional system, (4) personnel training for the implementation of systems, (5) impacts of the system, and (6) models of instructional systems. A glossary of key terms used in the conference, a list of instructional systems in use, and concerns voiced by various delegates are appended. (SC)

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# SUMMARY REPORT

of the

# THIRTEENTH LAKE OKOBOJI EDUCATIONAL MEDIA LEADERSHIP CONFEREN

Iowa Lakeside Laboratory
Lake Okoboji
Milford, Iowa

August 20-24, 1967

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NOTE: This Summary Report of the Thirteenth Lake Okoboji Educational Media Leadership Conference should be considered as a series of working papers and should be so listed if reproduced in any form.

It should be noted that the papers were prepared after only a few days of deliberation. They were prepared by separate groups with no effort made to polish them or make all of the final reports a cohesive whole. Thus the committees emphasized that there are limitations in the reports in the form of possible omissions, duplications, and contradictions. This condition is accepted in light of the fact that the separate groups were more concerned about personal values of exploring the problems associated with the theme of the conference than they were in publishing a final report. This report, therefore, should be regarded as an incomplete outline of the conference proceedings and discussions and nothing more.

IR004443

# TABLE OF CONTENTS

Page

Foreword . . . . . . . . . . . . . . . . . . . . . . . . v

Persons Attending Thirteenth Lake Okoboji Educational Media Leadership Conference . . . . . . . . . . . . . . . . . . 1

Conference Planning Committee . . . . . . . . . . . . . . . . 6

First General Session. . . . . . . . . . . . . . . . . . . . 7
  Keynote Address - Robert Heinich . . . . . . . . . . . . . 7

Second General Session . . . . . . . . . . . . . . . . . . 29

Third General Session . . . . . . . . . . . . . . . . . . 30

Fourth General Session . . . . . . . . . . . . . . . . . . 31

Fifth General Session. . . . . . . . . . . . . . . . . . . 32

Sixth General Session. . . . . . . . . . . . . . . . . . . 33

Seventh General Session. . . . . . . . . . . . . . . . . . 34

Eighth General Session . . . . . . . . . . . . . . . . . . 34

Ninth General Session. . . . . . . . . . . . . . . . . . . 35

Tenth General Session . . . . . . . . . . . . . . . . . . 36

Eleventh General Session . . . . . . . . . . . . . . . . . 37
  Summary Report by David Crossman . . . . . . . . . . . . 39

Final Committee Reports as Revised . . . . . . . . . . . . 43
  Resolutions Committee Report. . . . . . . . . . . . . . . 43
  Study Committee Report #1 - Kinds of Systems . . . . . . . . 45
  Study Committee Report #2 - Redefining Roles for a Systems Approach -- The Need for a Transitional Stage . . . . . . . 51
  Study Committee Report #3 - Climate of Acceptance . . . . . . 58
  Study Committee Report #4 - Training for Systems. . . . . . . 64
  Study Committee Report #5 - The Futures Committee . . . . . 67
  Study Committee Report #6 - Developing Instructional Systems . 71
Pictures of Delegates . . . . . . . . . . . . . . . . . . . 83
Appendix A - Glossary of Terms . . . . . . . . . . . . . . . 93
Appendix B - Sharing Sessions . . . . . . . . . . . . . . . 95
Appendix C - Innovations in Secondary Schools - an Abstract . . . 97
Appendix D - Instructional Systems in Use . . . . . . . . . . 99
Appendix E - Concerns of Delegates . . . . . . . . . . . . . 101

# FOREWORD

It has been a distinct pleasure for The University of Iowa to cooperate with the Department of Audiovisual Instruction of NEA for the past thirteen years in holding the Lake Okoboji Educational Media Leadership Conference.

Many delegates have often asked if we can predict the outcome of an Okoboji Conference. My answer has always been that we probably can predict the approach the delegates will take and, we who have attended all the conferences, could sometimes predict the hourly developments, but never the final results. The results from this meeting are an amalgamation of diverse conceptions from a number of delegates who put together reports relating to specific problems in the field.

The benefits from Okoboji are not the Summary Report that has been printed each year but rather the personal growth resulting from working as a member of a group, the "take-home information", and the ideas exchanged during the four day meeting. The word "Okoboji" in Indian language means "place of rest." In the modern version of the Okoboji Conference the word could, in my estimation, be changed to "a place to think and try out with your peers your dreams for the future."

I have often thought: "Just where does the Okoboji Conference fit into the future of DAVI?" In the past thirteen years Okoboji seems to have been a sounding board. It brings forth ideas that are in the planning stages, not in the past, and provides time to discuss the newly emerging developments. It provides leaders from all over the United States, Canada, and several foreign countries an opportunity to match their ideas with others and develop plans that will help in bringing about "change" in this vast field of education. If it does nothing more than identify the problems facing education in the 1970's, it will no doubt have fulfilled its purpose. The conference also has had a distinct influence on the four hundred and fifty delegates who have attended to establish "think conferences" in their own sections of the country.

I would remiss if I did not convey thanks to Teaching Film Custodians, Inc., New York, N. Y., for their financial contribution over the past thirteen years. TFC assisted greatly in making the conference possible. Future funding will, no doubt, place more responsibility on the delegates for their own expenditures, with some grants being made to assist in securing keynote speakers, and other related costs. The University of Iowa will continue its managerial functions and offer the facilities of the Iowa Lakeside Laboratory as long as the delegates and others think the Okoboji Conference is making a contribution to the future of education.

Lee W. Cochran

Lee W. Cochran
The University of Iowa

Chairman: Iowa Committee for
Okoboji Conferences

# PERSONS ATTENDING THE THIRTEENTH LAKE OKOBOJI EDUCATIONAL MEDIA LEADERSHIP CONFERENCE

August 20-24, 1967
Iowa Lakeside Laboratory, Milford, Iowa

Note: (66) The number in parenthesis following the name indicates the previous years this person has attended Okoboji conferences and special committee assignments, if any.

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# 1967 OKOBOJI CONFERENCE PLANNING COMMITTEE

The following persons were appointed by President Kenneth D. Norberg, DAVI, to serve on the Planning Committee for the Thirteenth Lake Okoboji Educational Media Leadership Conference:

Robert Heinich, Chairman
Arthur Cowdery
Harold Hill
Howard Hitchens

Robert Hunyard
Marie McMahan
John Vergis (unable to attend)
Lee W. Cochran, Ex-Officio

Following the appointment of the Planning Committee, information was sent to each member, along with a list of the five (5) topics receiving the highest number of votes by the 1966 Okoboji Conference delegates as recommended topics for the 1967 meeting. The committee chose the topic "Systems, Automation, and the Future of Educational Media".

In October, a ballot was mailed to all delegates asking them to vote on the ten (10) persons they wished to return to the 1967 conference. In December, the DAVI Office, Washington, D. C. sent to each DAVI Affiliated group a letter asking for nominations of a delegate to the conference. In April at the 1967 DAVI Convention, the Planning Committee met to make additional selection of delegates who might be considered resource people. The committee also selected six (6) advanced graduate students as delegates, and recommended other organizations who should be invited to send delegates.

At the April meeting of the Planning Committee a keynote speaker was discussed, and other organizational procedures and guidelines were established. The committee also recommended that each delegate be asked to write his or her "concerns" regarding the conference topic. All invitations and correspondence recommended by the committee regarding the conference was carried on by the Chairman, Iowa Committee for Okoboji Conferences, The University of Iowa.

The Planning Committee met next on August 19, 1967, the day before the opening of the conference. This meeting was held to establish a "semi-structure" for the opening sessions and to appoint operational committees.

The conference delegates are indebted to the Planning Committee for the organizational structure that made this conference a success.

* * * * *

# FIRST GENERAL SESSION

Sunday, August 20, 1967
1:30 p. m.
Presiding: Lee W. Cochran, Chairman, Iowa Committee for Okoboji Conferences, and Robert Heinich, Chairman, 1967 Okoboji Conference Planning Committee

I. Lee W. Cochran opened the conference with a welcome to all delegates and brought greetings from The University of Iowa President Howard R. Bowen and from Dean Robert F. Ray, Division of Extension and University Services. Mr. Cochran reminded the conferees that this was the thirteenth annual Okoboji conference and gave a very brief background of earlier conferences. He also reviewed for the delegates a little of the history of the Okoboji site and of the Iowa Lakeside Laboratory.

Members of the Iowa Committee were introduced to the delegates by Mr. Cochran.

II. Mr. Cochran introduced the keynote speaker, Dr. Robert Heinich, Director, Educational Systems, Doubleday & Company, Inc., who delivered the keynote address.

## KEYNOTE ADDRESS

by Dr. Robert Heinich

Several of you who sent in "concerns" asked for a definition of "systems." This is a hard word to define, depending on the level of abstraction involved and the operation to be performed, so I would like to offer three definitions. The first is by Silvern:

> A system is the structure or organization of an orderly whole, clearly showing the interrelationships of the parts to each other and to the whole itself. (39)

The second is by me:

> An operational system synthesizes and interrelates the components of a process within a conceptual framework, insuring continuous, orderly, and effective progress toward a stated goal. (21)

Now, to me, there is an interesting difference between these two definitions - a difference related to my comment above about the operations to be performed. Silvern's definition tends to imply an acceptance and description of what is given - the system is analyzed and described, and its operations optimized (presumably). The second tends more toward synthesis with a choice and control over the basic paradigm of the system: "the conceptual framework."

There is a fundamental difference between optimizing a system whose basic paradigm is set and re-synthesizing the same system around a new paradigm. A system which retains the conceptual framework of the classroom teacher as sole arbiter of the instructional experiences of students will be quite different from the one that considers the classroom teacher, along with other means, as a component of the system.

Parenthetically, I would like to say that I am simply using Silvern's definition as the occasion to raise this point, and not implying a difference between us. As of the last time we talked, we are in basic agreement.

At this point, the third and fourth definitions, from the DAVI definition monograph, should be introduced because they get down to brass tacks in terms of media:

> Systems Approach: An integrated, programmed complex of instructional media, machinery, and personnel whose components are structured as a single unit with a schedule of time and sequential phasing. Its purpose is to insure that the components of the organic whole will be available with the proper characteristics at the proper time to contribute to the total system, and in so doing to fulfill the goals which have been established.
>
> Systems Design (in Education): Provides a conceptual framework for planning, orderly consideration of functions and resources, including personnel and technical facilities such as television, the kinds and amount of resources needed, and a phased and ordered sequence of events leading to the accomplishment of specified and operationally defined achievement. A systems approach should provide a way of checking on the relation of performances of all components to factors of economy, and should reveal any inadequacies of the several components, including the faults of timing and consequently of the entire system. (11)

May I point out that these statements are, for the most part, also definitions of technology. I suggest careful study of them by any of you who are nervous about using "technology" as part of the name of the professional organization of media specialists.

But, meanwhile, back at the conceptual framework, a general definition is not as useful as identifying the system to be dealt with. I am discussing an instructional system in the context of the last definition. The implication is that all instructional resources, including all personnel, are assigned their functions within the system by the designers of the system. I have developed the idea, in another paper, that audiovisual materials tend to enter the instructional process at the classroom implementation level, whereas instructional technology enters the instructional process at the curriculum planning level. (20) As a corrollary of this, an audiovisual system is one which uses the traditional conceptual framework of the classroom teacher as the focal point of both instructional strategy and tactics; and a system based on instructional technology assumes a conceptual framework which places instructional strategy at the curriculum planning level, where assignments to the various components are made - components which include the efforts of mediated teachers and classroom teachers.

This fundamental difference in paradigms has been brought about by developments in newer media - particularly television, programmed instruction, language laboratories, filmed courses, and now, computer assisted instruction - that permit us to assign, with confidence, major instructional tasks to mediated instruction. Where necessary, we are able to assign students to mediated instruction for the entire instructional job.

This certainly has been recognized by those academic disciplines involved in curricular innovations. I would like to read a statement from a report by the Panel on Educational Research and Development of the President's Science Advisory Committee. Please ignore the use of the archaic word "aids", but please don't ignore the slap at the media profession and producers of media:

> In present efforts, special emphasis is placed in the technology of education--on motion pictures, television, tapes, and most recently, programmed instruction. What is of particular interest is that the development and use of these aids is increasingly under the direction of scholars and teachers, as in the production of the films for the new physics course. Until recently, the use of instructional aids has been for the most part under the direction of technicians. (25)

Evans Clinchy, in a report on the new curricula observes that the physicists in PSSC "knew they wanted to use films made by real physicists speaking directly to the students about topics of common concern." (8)

Developments in mediated instruction, then, have brought us to the place where a range of instructional tactics are available to the curriculum planning process. The first option is the traditional practice where the classroom teacher has complete control over the media to be used in the classroom. This may be called classroom teacher with or without media. It also represents the traditional paradigm of instructional management.

The second option combines the efforts of mediated teachers and classroom teachers into a pattern of shared responsibility. This arrangement permits the system to be very adaptive and yet retain the benefits of quality teaching on a broad base and the advantage of the rigor that is characteristic of the type of mediated instruction mentioned before. In actual practice, this may range from a situation where the classroom teacher takes the lead in determining the timing, and perhaps sequence, of the instructional events (as may be the case with PSSC) to a situation in which the mediated teacher sets the instructional pace (as in the case of much televised instruction). The linguist, John Carroll, for example, believes that all basic language instruction should be given to the student via the language laboratory (in other words, via mediated teachers) with the classroom teacher adding the finishing touches.

Notice, however, that the mediated teachers do not go through classroom teachers. In other words students have been assigned to mediated teachers for part of the time and to classroom teachers for part of the time. The classroom teacher does not have the final decision as to whether or not students will experience the instructional events prepared by these mediated teachers. That was determined at the curriculum planning level.

This is not to say that a classroom teacher cannot suggest changes in scope, sequence, or content of mediated instruction, but, he must return to the strategy level to do so. The same principles that guide team teaching operate here; and the classroom teacher is no more limited by the arrangement I am proposing here than he is by team teaching.

In many cases mediated teacher and classroom teacher may be the same person. The well-worn example of Postlethwaite is an illustration of this. If so there is no conflict between mediated teacher and classroom teacher. Attempts to get teachers in school districts to devise and produce their own mediated instruction represent efforts to avoid this type of conflict. I am not now talking in the old local-production terms but rather in reference to Hugh McKeegan's efforts in Milton, Pennsylvania and Gabe Ofiesh's project with the Washington, D. C. school system. Programs such as these are as important to watch as the early experiments in massive use of televised instruction because of the possible transferability of the instructional models produced. The question that I would raise is how to get mediated instruction developed in one place, accepted in another--or does everyone have to re-invent the wheel?

Problems arise frequently in the shared responsibility arrangement when the mediated teacher and classroom teacher are different people, and the classroom teacher is used in a non-teaching role while mediated instruction is in progress. In ITV, for example, the classroom teacher often is used as a disciplinarian. Under these circumstances, it is hardly surprising that the classroom teacher looks at mediated instruction as an invasion of the sanctity of the classroom. If mediated instruction is received in another environment with adult, but non-teacher supervision, conflicts of this type can be avoided. The best way to achieve this is to destroy the traditional classroom--and the trends toward individualized instruction in learning centers and large group instruction[1] will do just that. It is not surprising that television and language laboratories, as generally used, display the tendency of a technology to, as McLuhan puts it, "look in the rear-view mirror" in its early stages. As the automobile was first thought of as a horse-less carriage, so television and language laboratories are thought of as "electronic classrooms." The second generation is breaking the classroom apart in the form of electronic distribution systems.

The third option is mediated teaching alone. Programmed instruction and television are quite often used as total instruction.

These three broad choices, and all variations of them, form an instructional model based on the conceptual framework that instructional technology makes the curriculum planning level the focal point of decision making in regard to instructional tactics.

I'm sure you have all heard critics claim that mediated instruction restricts the student's access to varied points of view and the classroom teacher must be relied on to prevent this. I hold that precisely the reverse is true. To me it is abundantly clear that mediated instruction is the only way to be sure that students do in fact experience a wide variety of teachers and their viewpoints--if this is a goal of instruction. Through PSSC, for example, students previously limited to the experience of one physics instructor have the opportunity of watching many scientists at work. The Humanities series of EBEC also opens each classroom to a wide variety of teachers and viewpoints. How can people cavil at a technology which permits Pablo Casals to teach a master class in every high school in the country? Mediated teaching is a way to humanize the classroom, if by humanizing we mean allowing the student to contact the best humanity has to offer. If one of the purposes of education is to allow the student to sit at the feet of great men, media offers him the best seat in the house.

In somewhat the same vein, some critics, particularly curriculum specialists and educational philosophers, question the compatibility of mediated instruction and certain theories and methods of instruction. This topic requires and demands extensive treatment, but for our purposes here I would like to quote a few definitions of instruction to warrant the assumption that mediated instruction can adjust to all of them.

Bruner defines instruction as follows:

> Instruction consists of leading the learner through a sequence of statements and restatements of a problem or body of knowledge that increase the learner's ability to grasp, transform, and transfer what he is learning. (5)

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[1] Large group instruction is defined as the reception by a number of people of the same instructional event at the same time, whether they are in a large room, classroom, at home, or dormitory.

Gage defines instruction by defining teaching and research on teaching:

> By teaching, we mean, for the present purpose of defining research on teaching, any interpersonal influence aimed at changing the ways in which other persons can or will behave.
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> ****************
>
> The behavior producing the influence on another person may be "frozen" (so to speak) in the form of printed material, film, or the program of a teaching machine, but it is considered behavior nonetheless.
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> ****************
>
> Accordingly, we define research on teaching... as research in which at least one variable consists of a behavior or characteristic of teachers. (Recall that the teacher may be the author of a textbook or program, someone who is not seen by the learner.) (13)

Lumsdaine's definition is:

> Instruction used is a generic term referring to any specifiable means of controlling or manipulating a sequence of events to produce modifications of behavior through learning. (31)

These particular definitions were chosen because the people who wrote them have widely disparate views on the content and method of instruction. Yet the activities of each may be subsumed under any of the definitions.

Let me give one brief example of what I'm getting at. A very persuasive argument could be made that mediated instruction is the best means of implementing an existentialist theory of instruction. An instructional theory which stresses student option of instructional experiences is almost meaningless if the option consists solely of the classroom teacher. The existentialist position was chosen because it represents the extreme requirement of non-fixed instructional sequences and student control of decision-making, two requirements frequently cited as antithetical to the use of media. Project Discovery, particularly in Daly City, California, frequently achieves an existentialist position.

Some of these critics have also dwelt on a supposed inability of media to handle certain instructional methods. Inquiry teaching, problem solving, instruction in the affective domain are a few limitations, which media, on one form or another, are said to have. Certainly, mediated instruction tends to expository teaching, but just as certainly doesn't have to. A recent report of a conference held by the NEA on inquiry teaching in television indicates some directions in which to move. (32) Another dimension to this problem is the possible mix of instructional methods to produce varied behaviors. Gage, in the pamphlet, The Way Teaching Is, (40) seems to be leaning to the view that mediated instruction is the best way to get at the measurement of teaching variables.

It would seem that media, as well as teachers, may come in all forms and representations of instructional theory. The difference is that media are exposed to inspection.

If media specialists are finding that they must function at the curriculum planning level, then they had better be supported by well-developed theories of mediated instruction. It is hard for me to think of a more important area for investigation. Without such theories, the field is still in the audiovisual system category, disclaimers to the contrary. As starting points, I would suggest several of Hoban's papers of the last seven years (22, 23, 24), Glaser's concluding chapter in the second DAVI book on Programed Instruction (17), the chapter by Gage in The Way Teaching Is (40), Gagne's Conditions of Learning (14), and the recent report of Briggs, et al. (4). Finn's John Dewey Society paper, "A Walk on the Altered Side" is an excellent opening salvo on the question of technology and philosophy (12).

In his book, Man-Machine Systems in Education, John Loughary differentiates between "machine-independent" systems and "machine-dependent" systems (30). The "machine-independent" system which he describes fits the traditional instructional situation in education. It is one where all the machines could be removed and, except for minor inconveniences, business would go on as usual. This is because "educators have used machines to assist them to achieve results which were planned independent of machines." Think about that for a moment. Doesn't that describe virtually all of our uses of audiovisual equipment and materials? Entry into the instructional process at the classroom implementation level is a "machine-independent" system.

On the other hand, he describes a "machine-dependent" system as one where the machine is so intimately connected with the planning of the system that its removal would cause the system to collapse. This is illustrative of the system which I claim is implied when instructional technology enters the instructional process at the curriculum planning level.

Now, this is hardly a new idea. Hoban, in effect, said it in 1956 at the 2nd Okoboji Conference (2), and has developed the concept in a series of brilliant papers. Ken Norberg said it in these words at a conference on the professional preparation of media personnel:

> Current changes now going on in education suggest that AVC specialists must assume a definite role of active professional leadership in the design and implementation of new instructional programs. As the

> number, size and complexity of instructional problems increase, their solutions tend to become more comprehensive and more systematic. Finn said it some time ago. Technology enters in, at last at the level of broad instructional planning. In the contemporary school, we can no longer deal with instructional problems on a piecemeal basis, nor without altering existing conceptions of the teaching task in its relations to media-instrumentation. (36)

What I am trying to do is extend the implications of Norberg's statement to some of their, to me, logical conclusions.

I would also like to cast this in a slightly larger framework to illustrate that technology in education relates directly to the context of technology in society. In his book, The Stages of Economic Growth, Walt Rostow (38) discusses the conditions necessary for a society to move from a craft-centered economy to a mature, technological society. His outline of a craft economy bears a striking resemblance to Loughary's description of a "machine-independent" system. He points out that while productivity may increase in such a society, a ceiling is reached because of the inherent limiting condition. He uses the term "ad hoc technical innovations" the same way that Loughary uses "machine-independent." Hall, a historian of science, in a discussion of technological societies, makes this same point, claiming it "should be possible to discern, in a fully successful society, the transition of empirical craftsmanship into applied science." (18) Rostow and Hall would support Loughary in his assertion that a technological society is based on machine-dependent systems. What I contend is that the system that I have described has the potential to change education from a craft to a technological culture. Whereas, leaving certain decisions at the classroom implementation level tends to reduce the whole effort to an ad hoc situation. When shifting from a craft to a technological culture, there is a corresponding change in emphasis from the user of the tool to the designer of the tool. A film clip from Edward R. Murrow's See it Now program on "Automation" (3) will help make this clear - and also set the stage for my next point. Please let me make it explicit that I am not suggesting a one-to-one analogy between what is in the film and the instructional process.

## FILM CLIP

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(description)

> The film clip shows an aircraft wing being cut by a machine automatically controlled by data processing equipment, next to which is seated one man, arms folded. The next scene shows how the same type of wing was handled prior to automation. About six

> women carried the wing template and set it on the aluminum. The template was traced by hand onto the aluminum and the cutting blade laboriously handled by several men. The film shifts back to the automated sequence, this time showing that a great deal of time and highly skilled talent is necessary to prepare the program for the control equipment. The increase in productivity was brought about by transferring talent to the design, the "other," side of the machine.

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In order to move toward a technological society, we must transfer, as they did in the film, personnel and capital to the other side of the machine. In the diagram on the screen, this means shifting personnel and money from the classroom side to the media side.

In order to move toward greater use of individualized instruction in learning centers, and to other situations where the burden of instruction is shared to a great extent between mediated and classroom instruction, funds are going to have to be shifted to the other side of the machine. When I went through the "concerns" which you sent in, I was struck by the number of times the cost of the systems approach was mentioned. If we continue to simply add materials and equipment to the standard budgetary and instructional arrangements, the tendency of superintendents to look at mediated instruction as overhead will increase. We need to experiment with instructional management arrangements which force us into machine-dependent systems. In this way, mediated instruction will pay for itself.

Rostow stresses that a rate of investment in tools must be more than 10% to assure an increase in output over population increase, and must remain over that figure, in order to move into a technological society. Media account for less than 1% of a school district's budget. Federal funds have helped raise this percentage somewhat, although, I have heard complaints that some school district media budgets have not increased - and perhaps some have been reduced - in anticipation of federal aid. Overall local support of education has dropped during the last ten years from 62.6% to 54.1%. While most of the money in the total federal contribution goes for items other than media, the percentage of federal money for media is no doubt higher than the percentage of the school districts' budget devoted to media--so that with federal aid the average district's budget for instructional technology may be as high as 2%.

Although federal funds may increase the media budget, I think changes must be made in allocation of funds within the district. It is completely unrealistic to expect mediated instruction to take over, say, 30 to 40% of the students' instructional day on 1 or 2% of the budget. Considering both tools, in Rostow's sense, and salaries of mediated teachers the total should be more like 20% of the budget. Because of the unrealistic way budget categories are defined, it is easier to get this money when the mediated teachers are on a district's staff than when they aren't. Let me illustrate this very important point with an example. Suppose, when I was media director in Colorado Springs, I wanted to hire Harvey White of the University of California to teach physics over television. His salary (assuming the State Department would issue him a credential) would have been taken from the salary part of the budget. However, if I had decided to telecast the films of Harvey White, the money would have had to come from instructional supplies, a decidedly smaller budget. In both cases I am using Harvey White.

I am suggesting that when mediated teachers take over the burden of direct instruction, the money to pay them should come from the salary part of the budget regardless of the mode of presentation. This principle can easily be extended to programmed instruction, language laboratories, computer assisted instruction and curricular packages such as PSSC. We are not buying supplies, we're buying teachers. The budgetary allocation practices we now have, and some are frozen into law, are based on a craft society and the result of a guild approach to production.

I would now like to shift attention to the classroom teacher.

Obviously, the role of the classroom teacher will be altered under the new paradigm, but the changes will not be as simple as we would sometimes like to believe.

There is no particular problem with the first option--the teacher with media.

However, if the curriculum planning decision is the second option, then the classroom teacher's job may have to fit within the framework set primarily by the mediated teachers. Exactly what shape this takes will be determined by a number of factors, not the least of which will be the subject matter. The dimensions of the future of the classroom teacher are not clear, because a great deal of speculation is aimed primarily at reassuring the classroom teachers. With the achievement of reliable technologies of instruction, many observers have hastened to turn over the tasks of information-giver, drill master and so on to mediated teachers. Kurland, of the New York State Department, gets carried away with this prospect:

> The other role of the teacher will be to do what the machine never can do--motivate, counsel, and lead students to those higher-order functions which are the primary goals of education--to question, imagine, invent, appreciate and act. The teacher need no longer be the purveyor of information or even the developer of basic skills and understanding. When

> he meets students in formal classes, they will be prepared together to move into the most intricate and challenging aspects of a subject. And the numbers of such formal meetings which will be required will be greatly reduced. There will be time for his own research and for the more intimate, informal contacts which all good students find to be the most rewarding part of collegiate life. Under such conditions the teacher can be what, at his best, he always has been--a model, a stimulator, a guide, planner, and fellow searcher after truth, meaning and value. In this way we may yet preserve that vital personal relationship between student and teacher which is so gravely threatened by the onrush of students and the attendant de-personalization of our institutions. (29)

Classroom teachers may not be prepared for this. Dale, for example, found during his programmed vocabulary studies that the teacher "felt at a loss when he was not correcting the self-correcting items." (10) The teacher missed the reassurance of the routine chores associated with teaching. In the area of guidance, Riley cites research illustrating that classroom teachers are not well informed in child behavior and do not tend to identify those student concerns which, according to experts, are the important ones. (37)

Some people have mentioned that motivation will be a prime job of the classroom teacher. Programmers, whose psychological posture almost makes motivation part of mystique rather than science, like to emphasize this. However, according to the old A-V texts, motivation is one of the great attributes of certain kinds of media. In fact, those texts remind us that a number of the instructional jobs left to classroom teachers by present commentators are exactly those, that, in a previous period of research, were found to lend themselves to media. Hoban, Dale and Finn, in a summary of the research in audiovisual methods published in 1950, compiled the following list of advantages of media:

1. They supply a concrete basis for conceptual thinking and hence reduce meaningless word-responses of students.

2. They have a high degree of interest for students.

3. They make learning more permanent.

4. They offer a reality of experience which stimulates self activity on the part of pupils.

5. They develop a continuity of thought; this is especially true of motion pictures.

6. They contribute to growth of meaning and hence to vocabulary development.

7. They provide experiences not easily obtained through other materials and contribute to the efficiency, depth, and variety of learning. (9)

What is left for the classroom teacher? How about problem solving? Bruner tends to think that teachers do not have the methodological skills to teach a problem solving approach, and is now engaged in developing mediated instruction, incorporating problem solving methods. And computer assisted instructors are developing techniques to engage the student in problem solving dialogues.

Well, someone has to take attendance! Not according to Bushnell, who has it worked out so that the administrative tasks of the classroom are turned over to a computer. (6)

Sometimes it is necessary to pick up the other end of the stick. Before instructional technology, the classroom teacher had to assume all the tasks involved in instruction. Now, however, considering the research in media, a legitimate question is: "What does the classroom teacher bring to instruction that is unique?" We've never been in a position to ask before. Up to now the shoe's been on the other foot. The point is that we need to study what classroom teachers bring to the instructional environment so that better decisions may be made at the curriculum planning level. Jackson, in a summary of research on teacher behavior, regretfully concludes that very little has been discovered. The past decade has produced a number of efforts to analyze classroom teaching in order to maximize teaching effectiveness. Discussions of this research with references to the original reports are contained in the excellent pamphlet, The Way Teaching Is. I cannot resist quoting Corey's comment on much of this research. He makes the point that lack of information on cause and effect is similar to observing "that healing and a general health improvement often occur during the exorcising rituals of witch doctors" and that to improve health we "single out the witch doctors with the best client records, and develop a program to make all witch doctors behave like those who appear to be most successful." It is very possible that this activity - the research not the witch doctors - corresponds to the situation in science noted by Kuhn in The Structure of Scientific Revolutions, (28) where the old paradigm becomes vigorous when threatened. In all seriousness, and with no attempt at flippancy, it might very well be time to conduct experiments with control groups taught by media and classroom teachers as variables in the experimental groups. Perhaps, in some cases, as Carpenter has suggested, classroom teachers generate more "noise" than information (7). But, more importantly, we may find that the research on teacher behavior may combine with media research to produce an optimal mix.

In discussing the media specialist, I am referring to the person in a central staff position. I am not referring to the building coordinator.

If the concept of "aid only" is abandoned, and media assume the posture of direct instruction, it soon follows that the attention of the media specialist is directed more and more to increasing the effectiveness, not of the classroom teacher, but of the media teacher. One indication that this is happening at the present is the frequent reference in the professional literature to focusing on the behavior of the student. After directing attention to student behaviors, the next step is to achieve those behaviors by other than traditional means and by other than traditional ways of planning. In other words, if educators concentrate on the behavior of the student, attainment of instructional objectives may be sought with regard only to the best means available. This point would only be raised in this fashion by someone who happens to have alternate methods available and that someone is the specialist in mediated instruction. Gilpin (16), for example, stresses using an ends-centered rather than a means-centered approach, thus eliminating a commitment to classroom teaching by returning to the objectives of instruction. As Gilpin does this, the reader is well aware that he has media, particularly programmed instruction, in mind, which ultimately is a commitment to mediated teachers.

The problem of identifying the classroom teacher as a means-centered approach and therefore by-passable when appropriate is very disturbing professionally, and difficult for anyone brought up in the profession to accede to when the chips are down. Richard I. Miller (35), in an official NEA report comments that, "television can be the sole teacher" and then summarizes that section of the report with "educational television is a major resource which can assist the teacher by providing students rich and broad experiences." It is obvious from the context that he is referring to the classroom teacher, who by the evidence of his first statement may not even be there! His report on TV would have been much more meaningful had he differentiated between media teachers and classroom teachers.

In general, classroom teachers tend to reduce all media to the status of aids, as a perfectly understandable way of removing them as alternatives. This tendency is reflected in traditional audiovisual circles by treating all media as equals: as if television were the same as an overhead transparency. This problem is to some extent evidenced in a statement by Gerlach: "the heart of the audiovisualists professional duty lies in helping the teacher to implement clearly defined instructional tasks." (15) Now, if a media director says that he has just made a set of overhead transparencies, the reasonable assumption is that he is helping the classroom teacher. If, however, he has produced a series of television programs, he has helped the media teacher achieve specific objectives derived from broader objectives decided upon at the curriculum planning level. This distinction is fundamental. It is precisely that some media and combinations of media are alternatives to classroom teachers rather than aids that compel decision making at a higher level. Media extend the range of strategy decisions made at that level. As a result, the media specialist's primary function is to help make those decisions and then assist media teachers to effect them. He then supports the classroom teacher along the lines developed at the curriculum planning level. If I were to return to the public schools as a media director, I would not define my job as helping classroom teachers but rather as helping make curricular decisions affecting instructional technology and then implementing those decisions.

For those of you who are interested in a curricular translation of what I'm trying to get at, I recommend David Krathwohl's article in the March 1965 issue of the Journal of Teacher Education (27). I'm sorry time doesn't permit an analysis here.

Instructional technology as an applied field has two broad divisions: the content of the field and the operational tasks necessary to implement the content. The operations are more easily visible. These include all the logistical and administrative requirements of media programs, including responsibility for the pursuit of funds available from federal and foundation sources. The content derives from the translation of theories of learning into theories of instruction and in combining the latter, along with other factors, such as classroom teachers, into an operational system.

The operations are more reassuring to perform. Just as Dale's English teachers felt lost without the chores associated with teaching, so do many media specialists seek justification and solace in the operations of the field.

When threats to status are made, the defense tends to center around the hard core of the job--the operations. Homage to content is made at ritual meetings, but often is forgotten in the heat of the battle, and the genesis of the profession is obscured in the ensuing dust and smoke.

At the present, the obvious conflict is between media specialists and librarians over the operational aspects of media programs.

The curricular implications of the above are far more crucial than arguing over "who will push the cart," and media specialists had best see to it that they don't win the battle and lose the war. More and more people in education are becoming aware of the power of technology, and will be moving in to pick up control. The media specialist must follow instructional technology into curriculum planning, otherwise he will have a function in place of a field. Due primarily to Title III ESEA projects, there is more indication today than there was two years ago, that he is retaining curricular identification.

However, the issue is still unsettled, and the field would do well to heed the charge of DAVI President, Kenneth Norberg, in his inaugural speech:

> I believe our present task is not so much to define our field, as to create it. The reason nobody knows for

> sure what an educational media specialist is, is that a full-fledged media specialist doesn't yet exist. The difficult part of being in this field is that we literally have to carve out our role. We have to sculpture ourselves and our jobs into being as we go along.
>
> I believe we are creating a new and unique field of professional endeavor which is an outgrowth of our joint interest in the process of human learning on the one hand, and the development of a modern technology of instructional communication on the other. (33)

There are many implications for research in the system that I am talking about that are not being explored enough by the people in higher education. Many of these fall into what is referred to as operations research (OR). Ackoff defined operations research as follows:

> Research in problems involving the control of organized (man-machine) systems to provide solutions which best serve the purposes of the organization as a whole by interdisciplinary teams through the application of scientific method. (1)

Hoban has long had an interest in OR, as evidenced by this statement made at a symposium at Stanford:

> The crux of operations or operational research is its central idea of applying scientific methods and technologies of research to real-life operating complexes for the purpose of obtaining data on the basis of which policy and operating decisions can be made with great certainty of outcomes. One of the significant characteristics of operations research is that it is generally applied to specific problems in specific (local) situations.
>
> In the academic community, operations research has little acceptance or status. Consequently, in research done by academic institutions or by academically-oriented researchers, the tendency is to shy away from operations research. This is unfortunate, since it is quite clear that educational innovation neither begins with nor is accepted on the basis of the type of research studies applauded at professional meetings and published in the high prestige research journals. (24)

Hoban's remarks give insight into a curious gap in respect to systems development in AVCR, the "prestige research journal" of the field. Since OR is the methodology used to optimize the system, and awareness of its requirements grows out of system design, then a recognition of the nature of systems would lead to a recognition of the need for OR. Looking at it the other way around, lack of recognition of OR may indicate a lack of awareness of systems. I am afraid that most of the researchers in higher education do not understand systems at the operational level and are rooted, by and large in audiovisual approaches.

There have been several general articles in regard to systems in AVCR, but the research during the fourteen years of its existence reflects inter-or-intra-component studies, and not research relating the components to the whole. This is not to deny the value of the studies in eventual system design, but rather to point out the lack of system orientation in the conception of problems identified as needing research.

Perhaps it is to be expected that research in the field would continue along the traditional lines of investigating either how to make a particular medium more effective (intra-component) or how one medium compares with another (inter-component). Certainly both are necessary, although inter-component research has been criticized severely, particularly by Lumsdaine. However, research problems of the system as a whole have been left virtually untouched. The field may be suffering from an ever increasing gap between the main concerns of practitioners in reference to the systems approach and the narrower concerns of research workers. If theory and research are intended eventually to influence practice, researchers had best find out what practice is in the process of becoming.

Engagement in OR would reveal the inadequacies of inter- and intra-component research. Inter-component research does generate technologies of instruction but the system generates requirements beyond the technologies of instruction just as systems engineering goes beyond the individual fields within it. This is one reason why a great deal of standard research is not useful to practitioners. (Incidentally, what I have just said is also the difference between "instructional technology" and a "technology of instruction." In this analogy, systems engineering corresponds with instructional technology and the individual engineering sciences used in any given system correspond to technologies of instruction. )

One of the limitations of inter- and intra-component research is that no account is taken of factors in the instructional environment which frequently determine media use and effectiveness. For example, research may indicate that a sound filmstrip will teach a certain subject as well as a film, but the deciding factor may be the awkwardness of the equipment involved, or that students in ordinary instructional settings will not attend to a filmstrip as long as a film. Much more study is needed on optimum lengths of time students should spend with various kinds of mediated lessons, partly because mediated instruction is much more concentrated than classroom instruction. Problems of requirements of logistics and supervision, and of student preference need to be looked into.

(Keyno[illegible]s continued - Dr. Robert Heinich)

A g[illegible]eal of research needs to be done in the sociology of mediated instruction. What are the sociological implications of changed teacher roles? How do we change the classroom teacher's reward structure from identification as subject matter expert to something else? How does teacher resentment of media transfer to students and how may this be overcome? Can balance theories of communication be used to restructure situations so that dissonance is reduced? As far as I know, Jim Knowlton is the only one who has used the theory of cognitive dissonance in an experimental study of media use (26). I always regretted that he didn't pursue this further.

How can expressive as well as instrumental values be built into mediated instruction? That students on occasion do respond affectively to television teachers has been demonstrated by reception of mail and reactions of students when television teachers visit classrooms. Ways need to be found to build this into other media.

All of the above tend to fall into operations research, because they are concerned with the relation of the components to the whole.

As a start, a search might be made of the research literature to identify studies which, when re-examined from the present state-of-the-art, contained elements of operations research. The Nebraska studies right after World War II can be viewed as studies in how media systems might be managed. (34) The Denver-Stanford studies in programmed instruction and television are oriented towards OR. Some of the signal corps studies, particularly the ones which combined T. V., P. I. and laboratory exercises also qualify. Going back through the literature not only serves to identify the roots of operations research, but also should lead to better identification of problems to be investigated. At the same time, operations research, as conducted in other fields, should be studied for transferable models.

I realize that I have not touched on many specific problems you are faced with and hope to get information about at this conference. I have relied on the notion that those urgent problems will surface in your group sessions. What I have tried to do is help you cast your discussions within a framework which gives perspective to the professional job you hold. And I hope I have raised some questions for you to consider.

I realize too, that I have not touched on the many different systems you deal with and in what ways they overlap; e.g. electronic distribution systems, and logistical systems. Again I have relied on the pressures of your own programs to bring out those problems.

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(First General Session - continued)

III. A very brief question and answer session followed Dr. Heinich's address. Lee W. Cochran then announced a fifteen minute break and asked the delegates to reconvene at 4:05.

IV. Mr. Cochran introduced the 1967 Conference Planning Committee and presented the conference gavel to Planning Committee Chairman Robert Heinich.

V. A motion by Arthur Lalime to retain the pre-selected conference topic, Systems, Automation, and the Future of Educational Media, was seconded and passed by the delegates.

VI. A motion to select two co-chairmen to preside over the remainder of the conference was seconded and passed.

VII. Robert Heinich asked Leone Lake, David Guerin, and Gordon Blank to serve as a nominating committee for the selection of co-chairmen.

VIII. Harold Hill moved that the Planning Committee be retained as an Advisory Committee to the co-chairmen. Seconded and passed.

IX. David Gifford suggested that an introductory roll call of all delegates be conducted. All delegates rose and introduced themselves as names were called from the roster of conferees by Robert Heinich.

X. The Nominating Committee presented four candidates for conference co-chairmen: Arthur Cowdery, Harold Hill, Howard Hitchens, and Marie McMahan. Balloting was conducted.

XI. Planning Committee Chairman Robert Heinich announced the following committee appointments:

A. Social Committee
John Hedges

B. Chairman of Rest
Stanley McIntosh

C. Press Committee
Esther Dahl
Charles Bollmann
Guy Watson

D. Blabbermouth Committee
Leone Lake, Chairman
Donald Lacock
Donald Potter

E. Conference Recorders
Norman Felsenthal, Chairman
William Horner
James Wise

F. Audio Tape Recording
Dennis Myers

G. Video Tape Recording
Norman Felsenthal

H. Keeper of the Word
Harold Hill

I. Conference Visualizers
Donald Lacock
David Little

J. Conference Summarizer
David Crossman

K. Story Tellers
David Guerin
Harold Hill
David Little

L. Resolutions Committee
Robert Snider
Marvin Dawson
David Guerin

XII. A motion by David Crossman to publish a conference summary report was seconded and approved.

XIII. Chairman of Rest, Stanley McIntosh, called for rest and asked Harold Hill to tell a story. Mr. Hill replied with a very "concrete" anecdote.

XIV. Robert Snider of the Nominations Committee announced the election of Harold Hill and Howard Hitchens as Co-Chairmen of the Thirteenth Okoboji Conference. Robert Heinich then presented the conference gavel to the new co-chairmen.

XV. A motion to adjourn by Robert Hunyard was seconded and passed.

## SECOND GENERAL SESSION

Sunday, August 20, 1967
7:35 p.m.
Presiding: Harold Hill

I. Harold Hill called the session to order. He and Howard Hitchens thanked the conferees for the "dubious honor" bestowed on them as newly elected co-chairmen. Peering over the podium, Mr. Hill reminded the delegates that he "used to be taller but was just worn down over the years."

II. Peggy Sullivan, George Hall, and David Guerin were asked to form a panel of three to elaborate on their "concerns" and react to the speech of keynoter, Robert Heinich.

George Hall urged delegates to view the system as a whole rather than the sub-systems which we deal with from day to day. "We began with curriculum and we must stay with curriculum, not with just the small portion which involves us directly."

Peggy Sullivan reminded the conferees that when we expand a speciality, some concern must be given to expanded costs.

David Guerin emphasized that our primary objective is not the systems package but the individual as a human being. "Education is a problem in communications," he said. "Teachers need systems not nearly as much as they need time. A teacher constantly mediates by manipulating the classroom environment," he said.

III. Rest was called at 8:30 p.m.

IV. The session reconvened at 8:35 p.m. Robert Heinich commented on the remarks made by panel members and also answered questions from the delegates.

V. Arthur Lalime suggested that the "specialists" attending the conference be asked to comment on systems during the Monday morning session.

VI. Guy Watson announced the readiness of news releases and asked delegates to fill in and return to him forms to implement the mailing of these releases.

VII. Adjournment was at 9:40 p.m.

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## THIRD GENERAL SESSION

Monday, August 21, 1967
8:00 a.m.
Presiding: Howard Hitchens

I. David Crossman briefly presented his definition of a system and cited some examples.

II. John Tirrell presented a nine-step concept which he called a Learning Materials Development Rationale. The steps include:

   A. Identify the educational goals
   B. Define the target population
   C. Prepare the task analysis
   D. Prepare the behavioral objectives
   E. Identify the types of learning
   F. Prepare criterion tests
   G. Select media for sequence of objectives
   H. Organize content material
   I. Test, revise, and validate material

III. Jude Cotter introduced the film Design for Learning which explained the use of the systems approach at Oakland Community College.

IV. Rest was called at 9:20 a.m.

V. Co-chairman Howard Hitchens announced that forty-five minutes after each afternoon session and thirty minutes after each evening session would be allocated for "Show and Tell" presentations by individual delegates. Marie McMahan was appointed to coordinate these presentations. (A list of those delegates making demonstrations is in the appendix.)

VI. Jude Cotter answered questions concerning the film he projected to the delegates. He also answered more general questions on the nature and development of systems at Oakland Community College. Mr. Cotter listed three steps in systems development: 1) the specification of objectives, 2) the detailed planning for implementation, and 3) the evaluation and application of feedback.

VII. John Barson reported on the development of systems at Michigan State University. He told the delegates that the MSU Systems Development was able to "pierce the academic curtain which prohibits media people from involvement in academic lectures." Mr. Barson reminded the conferees that a well designed lecture is a powerful tool and that the difference between a good and a poor professor is often the ability to choose appropriate examples.

VIII. Delegates were asked to complete their news release forms and turn in to the Press Committee.

IX. Storyteller David Little provided levity.

X. Social Committee chairman John Hedges told delegates that tickets for the Tuesday evening boat trip would be available and further explained arrangements for social activities that evening.

XI. The general session adjourned at 11:45 a.m.

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## FOURTH GENERAL SESSION

Monday, August 21, 1967
1:00 p.m.
Presiding: Harold Hill

I. Lee W. Cochran presented Co-Chairman Harold Hill with a "hill equalizer."

II. William Kunzler gave a preliminary report of a yet-to-be-published survey "A National Study in Educational Innovations in Secondary Schools." This study of the status of 27 educational innovations in 7,240 secondary schools throughout the United States was financed by the Kettering Foundation and coordinated by the North Central Association of Colleges and Secondary Schools. (A synopsis of the report is printed in the appendix.)

III. Rest was called at 2:00 p.m.

IV. Harold Hill reconvened the session at 2:05 p.m. Marie McMahan distributed a list of possible "Show and Tell" presentations and asked the delegates to indicate which ones they were most interested in hearing. Marie also described the newly produced series of communications films from Ohio State University which were available at the conference for preview by the delegates.

V. A slide talk by Arthur Lalime reviewed the development of the audio tape library now being used in his school district. Over 3,500 listening positions in 20 schools reveal the extent of the program.

VI. Harold Hill suggested that the conferees break into six groups for small group discussions to continue the remainder of the afternoon. The general session adjourned at this point.

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## FIFTH GENERAL SESSION

Monday, August 21, 1967
7:00 p.m.
Presiding: Howard Hitchens

I. Robert Heinich, chairman of a committee to formulate terms and definitions, distributed a duplicated glossary developed by the committee. Some discussion and suggestions for minor revision followed. The revised glossary was accepted by the delegates and appears in the appendix of this report. In differentiating between "systems" and "sub-systems", Dr. Heinich suggested that delegates "identify the largest system you are dealing with as the system, and the components of that system as the subsystems."

II. A revised list of working topics for the current conference was presented to the delegates by Arthur Cowdery. Some explanation of the topics was also given. Resource specialists were assigned to each topic.

III. Five minute rest at 8:05 p.m.

IV. Delegates reconvened for room assignments according to topics of interest. At this point the general session adjourned and conferees participated in small group discussions.

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## SIXTH GENERAL SESSION

Tuesday, August 22, 1967
8:00 a.m.
Presiding: Harold Hill

I. Brief progress reports were given by each of the six committees formed the previous evening.

II. John Barson presented and discussed sixteen (16) system concepts which were developed by educational systems specialists at Michigan State University.

### HUERISTICS OF SYSTEMS DEVELOPMENT

1. Always move toward finding and stating the instructor's objectives.
2. See that the faculty members are rewarded for work in instructional development.
3. Learn the professor first.
4. When you reduce reality, you also reduce the learning experience.
5. Always proceed on the basis of agreements.
6. Stress the human elements in the instructional system.
7. Nothing convinces like a visit, also nothing can deflate like a visit.
8. Don't let the words and manner get in the way.
9. Structure the conditions for survivability.
10. Find the pattern or format that will balance benefits and liabilities.
11. Faculty members are generally not moved to change behavior as a result of reading reports of instructional research.
12. In introducing a faculty member to a new programing technique or device, don't let subject matter interfere with his understanding of how it works.
13. The developmental model is universal only in a general way--functional clusters and linear sequence.
14. Involve the student continuously in the developmental process.
15. The development of "software" is more costly than the acquisition of "hardware".
16. The development of "software" is a continuous process.

III. The general session adjourned for further work by the six conference committees.

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## SEVENTH GENERAL SESSION

Tuesday, August 22, 1967
1:00 p. m.
Presiding: Howard Hitchens

I. Announcements were made by David Little and Marie McMahan regarding entertainment and "Show and Tell" scheduling respectively.

II. Each of the six committees presented progress reports to the delegates.

III. Rest was called at 2:00 p. m.

IV. Progress reports continued.

V. Gordon Blank was asked by the conference co-chairmen to head a committee for study of topics for next year's fourteenth Okoboji Conference. Other committee members appointed were Marie McMahan, David Crossman, and Robert Snider. Delegates were asked to submit topics for next year's conference to any member of this committee.

VI. Robert Snider, Chairman of the Resolutions Committee, reminded the conferees to file possible resolutions with him for study by the committee.

VII. Lee Green asked the delegates to give his committee information about any operational "system" with which they might be familiar. Forms were distributed for this purpose.

VIII. Adjournment for further work by individual committees was suggested and approved.

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## EIGHTH GENERAL SESSION

Wednesday, August 23, 1967
8:00 a. m.
Presiding: Harold Hill

I. Paul McClendon gave a well received slide lecture on Oral Roberts University and the development and use of an extensive Dial Access Retrieval System by the University. Questions and discussion followed.

II. The general session adjourned for committee work. Prior to adjournment committees were asked to prepare a first draft of their final report for presentation at 1:00 p. m. to the total body of delegates.

# NINTH GENERAL SESSION

Wednesday, August 23, 1967
1:00 p.m.
Presiding: Howard Hitchens

I. First drafts of reports from five study committees were presented to the delegates for study, discussion, questions, and suggestions for revision and/or deletion. Committee representatives presenting the first drafts included:

   A. Paul McClendon - "The Future of Systems"
   B. Mitchell Lichtenberg - "Redefining Roles for a Systems Approach"
   C. Arthur Lalime - "Climate of Acceptance"
   D. Woodfin G. Harris - "Kinds of Systems"
   E. John Barson - "System Development Exercise"

II. During discussion on the "Kinds of Systems" report it was suggested that Norman Felsenthal make a survey by mail of those persons and/or institutions utilizing the systems approach. Delegates were asked to give him the names and addresses of possible systems users. A survey report is included in the appendix of this report.

III. During presentation of the "System Development Exercise" report, Peggy Sullivan made a motion to delete the modeling exercises from the report of this committee. The motion was tabled.

IV. Harold Hill presented an informal report on the future of the Lake Okoboji Educational Media Leadership Conference. He advised delegates that continued financing for future conferences was not currently available and presented the Planning Committee's suggestion that delegates to future conferences be asked to pay housing and subsistence of approximately $40. Some discussion followed as to the advisability of moving the conference to another site. Harold Hill stated that the Planning Committee had considered this alternative but had recommended that the current site be retained.

V. The following motion by Gordon Blank was seconded and approved by the delegates. If financial resources do not permit the subsidy of future Okoboji Conferences, delegates will be asked to assume expenses necessary for year-to-year continuation of the Okoboji Conference at its present site.

VI. A consensus of the conferees indicated the desire to hold the Fourteenth Lake Okoboji Educational Media Leadership Conference during the summer of 1968.

(Ninth General Session - continued)

VII. Lee Cochran reviewed current procedures for delegate selection. These included:

A. Return of ten delegates from the previous conference (1967) to provide continuity base. These ten to be selected by a vote of their conference colleagues.
B. One delegate from each of the DAVI State Affiliates
C. Up to five delegates from states not having DAVI Affiliated groups
D. "Promising rookies" (advanced graduate students) up to one-fourth of the conference delegates as determined by the Planning Committee
E. Fifteen delegates as selected by the Planning Committee from those persons nominated as topic consultants or organizational representatives (NAEB, ALA, ASCD, etc.)

VIII. Al Rosen moved to retain the current delegate selection procedures for the 1968 conference. Seconded and passed.

IX. A motion instructing Co-Chairmen Harold Hill and Howard Hitchens and Iowa Committee Chairman, Lee W. Cochran, to nominate members of the 1968 Planning Committee to DAVI President Wesley Meierhenry was passed.

X. Conferees approved a motion to include the following items in the 1967 Conference Summary Report:

A. "Concerns" of the delegates
B. Keynote speech of Dr. Robert Heinich
C. Approved reports of the conference study committees
D. Additional papers at the discretion of the Publications Committee

XI. Conferees further approved the scheduling of the Okoboji Luncheon during the 1968 DAVI Convention in Houston.

XII. Adjournment at 5:10 p.m.

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## TENTH GENERAL SESSION

Wednesday, August 23, 1967
7:10 p.m.
Presiding: Howard Hitchens

I. David Guerin announced a "last call" for delegate resolutions to be considered by the Resolutions Committee.

II. Stories were told by David Guerin, Alice Hild, and Paul McClendon.

(Tenth General Session - continued)

III. Co-Chairman Howard Hitchens reminded study committee chairmen to have their final reports in published form for submission to the summary report recorder prior to Thursday noon.

IV. Al Rosen presented the first draft of the study committee report "Training for Systems" to the delegates for questions, discussion and suggested revisions.

V. The general session adjourned at 8:15 p.m. to allow time for final editing by each study committee prior to the final report presentations Thursday morning.

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## ELEVENTH GENERAL SESSION

Thursday, August 24, 1967
8:00 a.m.
Presiding: Harold Hill

I. Travel arrangements for departing conferees were announced by David Little.

II. Gordon Blank, chairman of a special committee to consider topics for the 1968 Okoboji Conference, presented eight (8) possible topics for consideration by the delegates. Each delegate was asked to vote for two topics and the final tally will be presented to the 1968 Planning Committee for guidance in selecting next year's conference topic.

| | | No. of votes |
|---|---|---|
| 1. | Education - Industry Dialogue | 42 |
| 2. | Curriculum and Media | 18 |
| 3. | Simulation and Gaming | 15 |
| 4. | Media and Cultural Deprivation | 15 |
| 5. | Computer Technology | 14 |
| 6. | Change and Innovation | 13 |
| 7. | Remote Access Technology | 4 |
| 8. | Organizational Patterns of State Professional and State Education Department Organizations | 2 |

III. David Guerin, chairman of the Resolutions Committee, presented to the delegates an edited and duplicated copy of resolutions for consideration. Al Rosen moved that the Resolutions of Action be approved as presented. Seconded and approved. Resolutions of Appreciation were also approved. (Resolutions are printed in this report immediately following these minutes.)

(Eleventh General Session - continued)

IV. Presentation and discussion of the six study committee reports began. Harold Hill suggested that discussion on each report be limited to twenty (20) minutes.

V. Woodfin G. Harris presented the report on "Kinds of Systems". He enumerated the changes that had been made from the previous version and answered questions. The report as revised was approved by the delegates.

VI. Mitchell Lichtenberg followed a similar procedure in presenting his committee's report "Redefining Roles for a Systems Approach". Delegates approved the report.

VII. Arthur Lalime distributed the final report on "Climates of Acceptance". Conferee approval followed.

VIII. Al Rosen called the attention of delegates to changes and additions in his committee's report "Training for Systems". The report was accepted.

IX. Paul McClendon distributed the report on "The Future of Systems". Changes were noted and the report was approved.

X. John Barson presented the report of the "Instructional Systems Development" study committee. A motion to take from the table an earlier motion by Peggy Sullivan was approved. Her motion to delete the modeling exercises from the report of the Systems Development Committee was then considered and rejected. The final revised report of the Systems Development Committee was then accepted.

XI. A motion to include all seven committee reports (the six study committee reports and an earlier committee's glossary of terms) was approved by the delegates.

XII. A suggestion to modify the previously approved selection procedure for delegates to future Okoboji Conferences was discussed. A motion to change the number of returning delegates (those voted back by their cohorts) from ten to "up to fifteen" was approved by the delegates.

XIII. Two quick stories by David Little dwelt with such diverse subjects as B. F. Skinner and golf.

XIV. Recess called at 9:20 a.m. for group pictures.

XV. Reconvened at 10:10 a.m. with Howard Hitchens presiding.

XVI. Ruth Cornfield told the conferees about man's best friend - the alligator.

(Eleventh General Session - continued)

XVII. International delegates, Ingmar Astrand and James Shaw, were asked to speak briefly. Ingmar Astrand of Sweden expressed his appreciation in being able to attend Okoboji, a conference which lasted four days and four nights. James Shaw told conferees he was going back to Canada with much more than he had come, both information-wise and luggage-wise.

XVIII. Robert Snider presented a brief "report from Washington". He expressed dim hope for copyright legislation during the current congressional term but optimism for passage in January or February. He also expressed the opinion that NDEA will be phased out. He told of the establishment of a National Commission for the Study of Copyright Implications in Technological Change. This committee will submit an interim report to Congress in one year and a final report in three years.

XIX. David Guerin moved that this year's conference co-chairmen be automatically included in the fifteen (15) resource people to be selected by the Planning Committee for next year's Okoboji Conference. Seconded and approved.

XX. Al Rosen briefly explained two constitutional amendments which will be presented to DAVI members. Details have since appeared in Audiovisual Instruction.

XXI. Arthur Lalime asked for a "without discussion" vote by the delegates of organizational names they would prefer if the DAVI Board of Directors considers a name change. David Guerin questioned the value of a vote without prior discussion. Al Rosen moved that delegates not vote on organizational names at this conference. The motion carried.

XXII. Conference summarizer, David Crossman, presented the following summary to the delegates:

## SUMMARY REPORT
August 24, 1967
by David Crossman

Like Christmas, Okoboji comes but once a year. Here, however, the similarity ends. Okoboji is no holiday as the 400 delegates of the past thirteen years would readily insist.

Okoboji is, rather, a luxurious adventure in fellowship and professional development. It is, certainly, a community exercise in endurance, persistence, patience and frustration. During the past four days, we have been stimulated, excited and informed. We have also cajoled, intimidated and misused each other, and have endlessly picked nits from our individual and treasured four day creative masterpieces.

For most of us Okoboji is sheer delight. Although a 16 hour working day is not customary in our day to day lives, the zeal which characterizes the Okoboji delegate during these four long days is a wonderful sight to behold.

For those coming to Okoboji for the first time it is, at once, both disturbing and illuminating. The mass confusion of the first few hours produces extreme anxiety in even the stoutest heart. The sight of 80 people thrashing about in this kind of mental maelstrom is a frightening spectre indeed.

Okoboji is as much an idea as a place. It represents, to our profession, the leadership, both proved and potential, that gives it strength. It represents, too, a persistent search for new ideas, new developments and new ways to approach the persistent problems of contemporary education. Perhaps more important than anything else, Okoboji represents a unique opportunity for us to spend four days in a joint effort of virtually continuous concentration on a topic of compelling importance in our professional lives. The beauty of the Lakeside Lab and the graciousness and care which have been extended to us has made our stay particularly pleasant.

To Lee and Lida Cochran; to the Iowa Committee; and to the staff of the Lakeside Lab, we owe particular thanks. Their attention to our smallest needs is most appreciated. We owe thanks as well to Bob Heinich for his excellent keynote address, and to John Barson, Jack Tirrell and the other resource people who gave so generously of their time and talents. We also appreciate those who took the trouble to bring materials for the many special presentations that were made and to Marie McMahan who scheduled these events. Special thanks should go to Harold Hill and Howard Hitchens for their superb jobs as conference co-chairmen.

The subject of this year's conference represents an important change in the direction of formal education. In place of the random and often capricious dialogue of the traditional classroom, the development of educational systems was explored. By providing an integrated mix of men and machines structured into a single unit, the delegates set out to apply a new pattern of precision to the teaching-learning process.

The dimensions of the problem and the complexities of its solution, are enormous. And our efforts were only partially successful.

Our group and sub-group efforts reflected the frustrations of our task. Separately and together we explored the problems of definition and kind. We explored the roles of system personnel and the new place that media people will play in supporting these systems. We discussed the training that will be necessary as programs of this kind are designed and placed in use. We dealt also with the human engineering problems associated with accepting the novelties of systems design. Our efforts took experimental form as a model system was developed to serve as an illustrative pattern.

While many of our conclusions are incomplete and certainly all are tentative, the following ideas and questions suggest the course of our deliberations:

1. Is the teacher the sole arbiter of learning or a component of a system?

2. There is an important distinction between the classroom level and the curriculum planning level. The first is the traditional audiovisual level. The second is the appropriate point at which technological systems can be most appropriately introduced.

3. Mediated teaching, rather than isolating student from teacher, permits humanizing patterns never before possible.

4. A possible way of funding mediated systems is through the partial use of salary budgets for this purpose.

5. At the present time, there is little scientific foundation for most of the educational decisions we are called upon to make.

6. An instructional design system consists of the five major activities of: a. integrating; b. programing; c. mediating; d. learning, and e. evaluating.

7. In working toward a systems approach, roles should not be assigned to specific persons. Instead, functions will have to be assigned to specific individuals.

8. The step from traditional operations procedure to a systems approach cannot be effected instantly. A transitional stage seems apparent and necessary. The transitional stage provides experimentation, allows for maturity in handling new roles, gives an opportunity for discovering latent talent, and may indicate possible changes for the future system.

9. All professional members of any educational team should receive formal or in-service training in systems analysis and system design including the placement in the teacher preparation program of systems theory, as it relates to instructional planning.

10. Because of the increasing population rate and the necessity to learn more skills more rapidly, education by the 1980's will turn increasingly to system-analysis and technology. It is our hope and expectation that the media field will be professionally upgraded to enable those in it to assume a variety of different roles appropriate to their background and training.

11. It is possible that advances in technology itself may, by the 1980's cause a shift in curricular control from local toward national or regional authority. The new sources of control will include the Federal Government, regional consortia and the so-called learning industry. Our general estimate is that these structural adjustments will be made with relatively little conflict between the various local, regional and national parties-at-interest. This is not to suggest that there will not be some sharp "growing pains" as the new structures emerge.

Okoboji has been an experience which none of us will soon forget. Few of our questions have been completely answered, but we return home enormously enriched. Through intelligent use of our deliberations here we may be able to make additional contributions to the improvement of American education. It is the most important task of our time.

Okobojians Arise and
SYSTEMATIZE!

By David Crossman

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XXIII. Harold Hill donned an Indian headdress to tell delegates the "Legend of Um-Ga-Wa".

XXIV. Chairman of Rest, Stan McIntosh, gave a final report of his conference activities and returned the symbol of his authority to the co-chairmen.

XXV. Howard Hitchens reported that $200 had been contributed to the DAVI Scholarship Fund in memory of Eugene Oxhandler and that additional contributions be sent to Robert Snider in the DAVI Washington office.

XXVI. Harold Hill suggested a standing ovation for the Iowa Committee for their assistance in administering conference procedures. The conferees responded.

XXVII. Co-Chairmen Howard Hitchens and Harold Hill returned their gavel to Lee W. Cochran who Mr. Hill called "the real heart and spirit of Okoboji."

(Eleventh General Session - continued)

XXVIII. Lee W. Cochran told the delegates "It was an honor to have you here." He expressed the hope that this year's conference had made some contribution to the knowledge of each delegate and declared the Okoboji Conference closed until August 1968.

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## FINAL COMMITTEE REPORTS AS REVISED:

## RESOLUTIONS COMMITTEE REPORT

### I. RESOLUTIONS OF APPRECIATION:

A. The members of the Thirteenth Lake Okoboji Educational Media Leadership Conference hereby express their sincere appreciation for the hospitality of The University of Iowa at the Iowa Lakeside Laboratory and the co-sponsorship of the Department of Audiovisual Instruction of the National Education Association. Gratitude is expressed to President Howard R. Bowen; Dean Robert F. Ray, Division of Extension and University Services; Lee W. Cochran, Director, Audiovisual Center; John R. Hedges, Associate Director Emeritus, Audiovisual Center; Lida M. Cochran, Robert A. Long, Associate Director, Audiovisual Center, Donald Lacock, David Little, Calvin Mether, Norman Felsenthal, Ann Clark, Steve Knudsen, Dennis Myers, James Wise, William Horner, Walter Lake, and to others of the Iowa Committee.

The members also express their appreciation to Dr. and Mrs. Richard Bovbjerg, to Robert and Tannya Benson, to Mrs. Bessie McKinstrey, and to all the Iowa Lakeside Laboratory personnel.

B. The participants extend their grateful appreciation to the Board of Directors of Teaching Film Custodians, Inc. for helping to make this conference possible.

C. The Planning Committee for the Thirteenth Lake Okoboji Educational Media Leadership Conference, chaired by Robert Heinich, receives our vote of thanks. Committee members were: Harold Hill, Arthur Cowdery, Howard Hitchens, Marie McMahan, Robert Hunyard, and John Vergis (absent).

D. The members extend their thanks to Co-Chairmen Harold Hill and Howard Hitchens, as well as members of the steering committee for their able leadership and guidance throughout the conference.

E. The conference extends its appreciation and thanks to Dr. Robert Heinich of Doubleday and Company for presenting the keynote address.

F. The conference extends appreciation for excellent graphic arts service to Donald Lacock and for superb secretarial service to Ann Clark.

G. Members of the conference commend the dining hall staff consisting of Susan Pennington, Connie Peterson, Dana Bovbjerg, Fred Shearer, Harvey and Marlene Blankespoor.

H. The conference has been greatly enriched by the presence and viewpoints of the international visitors from Canada and Sweden, James Shaw of Edmonton, and Ingmar Astrand of Lannavarra.

I. The members wish to thank the various organizations that sent delegates to this conference. Their assistance was invaluable.

J. It is recommended that our appreciation be extended to editor-in-chief, Leone H. Lake, for her editorial leadership in the publication of our conference newspaper for the seventh successive year. Thanks also to the editorial staff: Donald Lacock, David Little, Ann Clark, Nell Hedges, Peggy Sullivan, Arthur Cowdery, and Ed Dawson.

K. It is recommended that reports of this conference be sent to members of the Board of Directors of DAVI for use at their discretion by any committees or commissions or agencies that are concerned with the topics and deliberations of this conference. It is further recommended that reports of this conference be sent to the State DAVI organizations and other audiovisual groups for appropriate use.

II. RESOLUTIONS OF ACTION:

A. Resolved that the DAVI Executive Committee be urged to initiate efforts to encourage the inclusion of the SYSTEMS APPROACH TO INSTRUCTION in teacher preparation and other professional programs.

B. Resolved that the DAVI Executive Committee as well as the Executive Committees of the state affiliates be urged to invite representatives from the areas of school administration and curriculum development and from the academic disciplines to attend DAVI and state meetings, conventions, and other functions; the purpose of this resolution being to familiarize personnel in these areas with the emerging importance of media.

C. Resolved that the DAVI Executive Committee be urged to lend the full support of the organization to the continuance of TITLE III, NDEA, at a level of $88 million for equipment and materials and of TITLE III-B at a level of $7.5 million for supervision and administration because of the great versatility of this TITLE in aiding the development of programs of individual school districts.

(Resolutions Committee Report - continued)

D. Be it resolved that DAVI through its Executive Committee be urged to encourage the development of federal legislation to provide mid-career professional improvement programs for media personnel.

COMMITTEE MEMBERS:

Marvin Dawson
David Guerin, Chairman
Robert Snider

* * * *

## STUDY COMMITTEE REPORT #1:

### KINDS OF SYSTEMS

This committee established the following steps in exploring the assigned topic:

1. Study the specific functions of different kinds of systems in the instructional area.
2. Delineate the various types of systems currently available for use in education.
3. Determine the role of industry in developing educational systems.
4. Examine methods of feedback and evaluation.

Members of the conference were to be given practical examples of types of systems, the goals, implementation, and evaluation of these systems.

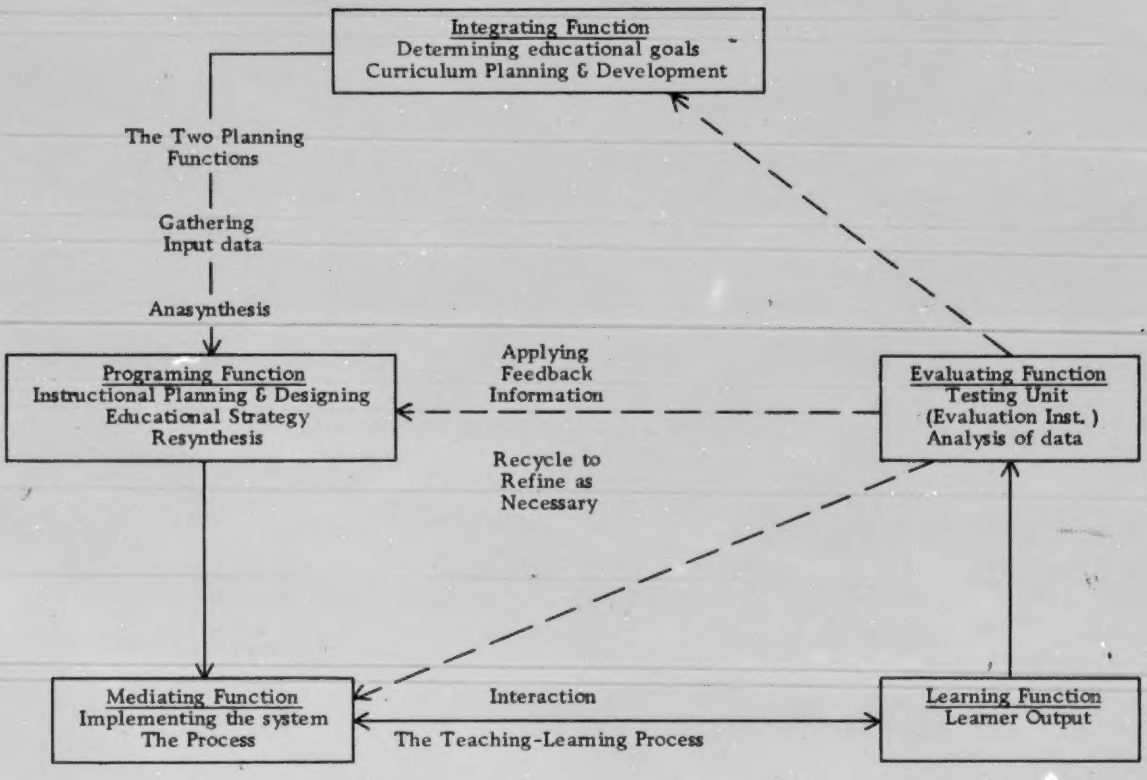
### I. Five Elements of Systems Design

The following is a simple item analysis, grouping the components, functions, elements, and steps of various systems models into five major activities of an instructional design system: Integrating, Programing, Mediating, Learning, and Evaluating. This material was gathered from the works of:

John Barson
Jude T. Cotter
Robert M. Diamond
Michael R. Eraut
Lester C. Essig
James D. Finn
John B. Haney
Robert Heinich
Donald W. Meals
Leonard C. Silvern
John A. Tirrell
Ralph A. VanDusseldorp

and re-assembled by members of the committee.

## A. A System for Designing Instructional Systems


Integrating Function
Determining educational goals
Curriculum Planning & Development
The Two Planning Functions
Gathering Input data
Anasynthesis
Programing Function
Instructional Planning & Designing
Educational Strategy
Resynthesis
Applying Feedback Information
Evaluating Function
Testing Unit
(Evaluation Inst.)
Analysis of data
Recycle to Refine as Necessary
Mediating Function
Implementing the system
The Process
Interaction
The Teaching-Learning Process
Learning Function
Learner Output

The arrows indicate the flow of information and the results of the effort of each function that are passed on to the succeeding function. The dash-type arrows indicate possible alternate routes the information and results of the evaluation function might take in re-cycling to refine the system.

(Study Committee Report #1 continued)

B. The Two Planning Functions - Integration and Programing

1. Determine elements of input
2. Gathering input data
3. Total input data combined
4. Anasynthesis

INTEGRATION FUNCTION

1. Determining broad educational goals (college-school-department-course-session)
2. Curriculum planning and development
3. Analysis (taking existing systems apart)

Steps of Procedure

1. Initial meeting - discuss course
2. Identify educational goals - general objectives
3. Define target population
4. Prepare task analysis
5. Define desired output to achieve desired goals
6. Specify entry and terminal behavior
7. Define behavioral course objectives
8. Develop rationale for pre and post exams
9. Develop criterion tests and measures (evaluating instrument)

PROGRAMING FUNCTION

1. Instructional plan and design (strategy)
2. Design the system so input and process produce output
3. Synthesis and resynthesis

Steps of Procedure

1. Determine strategy of instruction
2. Determine time and cost to operate system and achieve output
3. Lower output requirements if cost is excessive
4. Lesson plan (content)
5. Identify types of learning
6. Flow chart
7. Develop teaching examples of determined content
8. Select media for sequences of objectives (transmission vehicles)
9. Locate sources of materials
10. Preview materials
11. Production of materials
12. Implementation of material into the system
13. Test system and make recommended revisions (dry run)
14. Document the system by writing detailed procedures for input and output

(Study Committee Report #1 continued)

## C. The Two Instructional Process Functions - Mediating and Learning

MEDIATING FUNCTION

1. Instruction
2. The process
3. Implementing the system
    a. The teacher alone
       classroom teacher
    b. The teacher with media
       classroom teacher
       display units
    c. The media alone
       mediated teacher
       display units

Steps or Procedures

1. Prepare physical facilities
2. Prepare the learners
3. Utilize media
4. Review material content
5. Follow-up activities

LEARNING FUNCTION

1. The learner - students - child
    a. Individualized instruction
    b. Small group instruction
    c. Mass or large group instruction
2. Learner output
    a. Attitude formation
    b. Knowledge-concept development
    c. Motor skills
    d. Learner cognition
    e. Cognitive change
    f. Behavioral change

## D. The Evaluating Function

1. The testing unit (Evaluation instrument)
2. Analysis of data
3. Evaluation and re-cycle to refine as necessary
4. Applying feedback information

## II. Instructional Systems Currently in Use

Examples of current instructional systems at the following institutions have been submitted by conference members. More detailed information is contained in the appendix of this report.

ELEMENTARY GRADES

Norwalk Public Schools, 105 Main St., Norwalk, Connecticut
Stanford University, Stanford, California
Grand Island Public Schools, Grand Island, Nebraska
Research and Learning Center, University of Pittsburgh, Pittsburgh, Pennsylvania
Temple City Public Schools, Temple City, California
Westchester County Boces #1, Yorktown Heights, New York

JUNIOR HIGH SCHOOL

San Jose Unified School District, Park Avenue, San Jose, California

HIGH SCHOOL

Somerset County Media Center, 422 Rt. 206 South, Somerville, New Jersey
La Puente Union High School District, La Puente, California
West Hartford Public Schools, West Hartford, Connecticut
Norwalk High School, East Avenue, Norwalk, Connecticut
Carbondale Community High School, 200 N. Springer, Carbondale, Illinois
Rochester Public Schools, Educational Complex, Rochester, Pennsylvania (K-12)

JUNIOR COLLEGES

Oakland Community College, Bloomfield Hills, Michigan
Grand Valley Community College, Allendale, Michigan
St. Louis Community College, St. Louis, Missouri (six systems)
Western Piedmont Community College, Morganton, North Carolina

COLLEGE

Purdue University, Lafayette, Indiana
Oklahoma Christian College, Oklahoma City, Oklahoma
Ohio State University, Columbus, Ohio
Oral Roberts University, Tulsa, Oklahoma
Wisconsin State University, LaCrosse, Wisconsin
Syracuse University, Syracuse, New York (two systems)
Northern Illinois University, DeKalb, Illinois (two systems)
Washington State University, School of Education, Pullman, Washington
Michigan State University, East Lansing, Michigan

## III. The Role of Industry in Developing Educational Systems

As educational institutions move into the use of the systems approach, it is apparent that many of the components that make up a system will not be under the control or jurisdiction of those institutions, but rather, that of industry. What will be the role of industry in the future in regard to educational systems?

In the past, educators have rarely specified exactly what they want to do. Therefore, industry has usually taken the lead in designing educational software, hardware, and systems. The educator has been forced to accept that which is available from industry because of his own reluctance to specify objectives.

Education is regarded as a major growth industry itself, accounting for forty billion dollars of business annually. The role of business in education should be of a cooperative nature, with professional educators taking the lead in specifying well defined goals from which industry may help design, manufacture, and supply hardware, software, and systems. State and national educational organization, including media interest groups should be so structured that they can present a united front in securing the specific needs of education.

The professional educator should no longer be expected to accept "hand-me-downs" from industry's military or home market. We must have common agreement as to what is needed so that industry will find it economically feasible to supply those needs.

(Study Committee Report #1 continued)

## IV. Methods of Feedback and Evaluation

This committee feels the feedback loop is one of the most important, and perhaps the most neglected, part of any system. Without specific evaluation of the system and its component parts, there is no basis for measurement or revision. While there are many types of evaluation, and they should all be utilized in the feedback circuitry, this committee felt that it would be beneficial to present one specific type of evaluation which is presently functioning at Oakland Community College. The purpose of the following example is twofold: 1. To give a working example of evaluation, and 2. To demonstrate how this evaluative instrument is used for revision of the system and its component parts.

### Testing at Oakland Community College

One of the goals of computer testing at Oakland is to provide feedback to the student, the teacher, and the administrator. A test item bank is established for each course. The test items are objective, and written to measure specific behavioral objectives. The test is computer generated, computer scored, and computer analyzed. The following information is provided for each computerized examination:

A. Feedback to the student

The student receives an individual computer printout which shows:

1. His rank on the test - i.e. 7th out of 30, 12th out of 30, etc.
2. His raw score on the test
3. The class average
4. An itemized list of the test items showing
    a. His answer
    b. The correct answer
    c. How all of his classmates answered the same question
5. The computer prints a message to the student telling him which specific objectives he missed, thus proving a definite guide for future study.

B. Feedback to the Instructor

The instructor receives a computer printout with the following information:

1. Name of student
2. Student's social security number (This is his student number)

3. Rank of each student on the exam.
4. Raw score for each student
5. Class average

C. Feedback for the System

Each test item has an individual history that is updated each time that item is given including: number of students who have answered that item, which answers were given, the difficulty level, reliability, and the date it was last used. The author of the test item uses this information for revision.

As the tests become more reliable, they will be used to make comparisons between classes, divisions, and the achievement levels of various campuses. This program will be used to measure the effectiveness of media and will provide the necessary information for curriculum change and course revision.

COMMITTEE MEMBERS:

Woodfin G. Harris, Chairman
Peter Brooks, Recorder

Jude Cotter
Arthur Cowdery
Lester Essig
Robert Fischer
Lee Green

* * * *

## STUDY COMMITTEE REPORT #2

## REDEFINING ROLES FOR A SYSTEMS APPROACH--THE NEED FOR A TRANSITIONAL STAGE

### I. Introduction

School systems operate on bases of stability and evolutionary change. Although the critics call for drastic revision, schools and their personnel know all too well that the school must continue to operate regardless of current problems.

Creating change, especially an organizational change as a systems approach would involve, can create a number of serious problems. Abrupt changes of roles may be one of the most serious problems of all. The fear of change and the uncertainty of roles resulting in antagonism to a change can not only stifle immediate change, but can bring negative attitudes to all future attempts at change.

In thinking about the problems of role redefinition necessary in a shift to a systems approach, it appears that there is a realistic and practical need for a transitional period before a system is effected. Role definition or redefinition cannot be accomplished effectively by a command from the central office of a school district.

Moving from a traditional approach towards a systems approach involves a change in status patterns. Status, a thing which teachers jealously guard, is too important to be tempered with in a speedy "efficient" manner.

## II. The Traditional School

A look at the traditional school is appropriate. In existing schools, roles are assigned to people on a singular basis. The role is in a sense frozen and with it, the individual who assumes that role.

Functions, the actions of people, are assigned to roles in an additive method. Responsibility is piled on responsibility without regard to the existing roles, or the necessary revision of roles which need to take place. Thus roles become unclear, often conflicting and often can be described only by an investigation of the historical folkways of the school.

Little regard is made of individual competencies. People assume tasks because their role demands them to do so, not because they are necessarily suited to perform specific tasks.

Little use is made of combination of people holding specific skills. Teams as problem solvers or change agents may exist in name only - functionally they are often failures. The teacher who has a problem generally "goes shopping" for help: first to the librarian - then the media man - then the administrator.

Perhaps the reason for these characteristics can be ascribed to the "unitary design" of task assignment in most schools. Our schools recruit teachers, give them nominal help (administrators, librarians, media people) and ask the teachers to make their own instructional decisions. What follows all too often is that many individual teachers move in many different directions, have various needs, place uneven demands on support personnel and produce ineffective instructional programs. The planning concept of the traditional school is "single-teacher centered." It should be program-centered or task-oriented. The traditional school has often built its instructional programs as if there was a single teacher in the school; then the program has been multiplied by the number of teachers in the system.

Here a paradox is to be found. The teacher, who is given ultimate responsibility for effecting an instructional program, is often given the smallest financial support and the least formalized aid in planning. Few structures exist in today's schools to bring maximum planning and appropriate personnel to bear on a problem or desired change.

In addition, support components as they now exist have taken on the "singularity" characteristics that teachers hold. Libraries, media centers, and other supporting groups operate as individual and separate institutions-each with separate lines of authority, and control, each with dependency upon the individual personalities of those who control, each acting according to historical folkways that these institutions have evolved in the school's lifetime.

Real instructional change occurs haphazardly if at all. Innovation is made dependent on individual efforts and operates at individual or single-plane levels. School-wide attempts usually produce different surface configurations but little permanent change occurs. Evaluation, even in its crudest form, is often absent. New programs are most often created on a "pressing need" basis, are implemented, and left to fail or succeed on their own. Teacher turnover, fickle budgeting, and other inconsistencies challenge new programs to survive.

Decision-making, access to information, and responsibility are but a few items which have been historically under the control of administrators. Administrators make determinations of policy (such as who shall share decision making tasks) and operate from an administrative frame of reference. Often functions, set by one group (such as administration), do not involve in planning stages, the very individuals who must perform those functions.

Generally in the traditional school we find that existing roles often do much to prevent effective action patterns. Chart #1 depicts such a situation using an instructional problem as an example. (See Chart #1 on following page.)

## III. The Transitional Stage

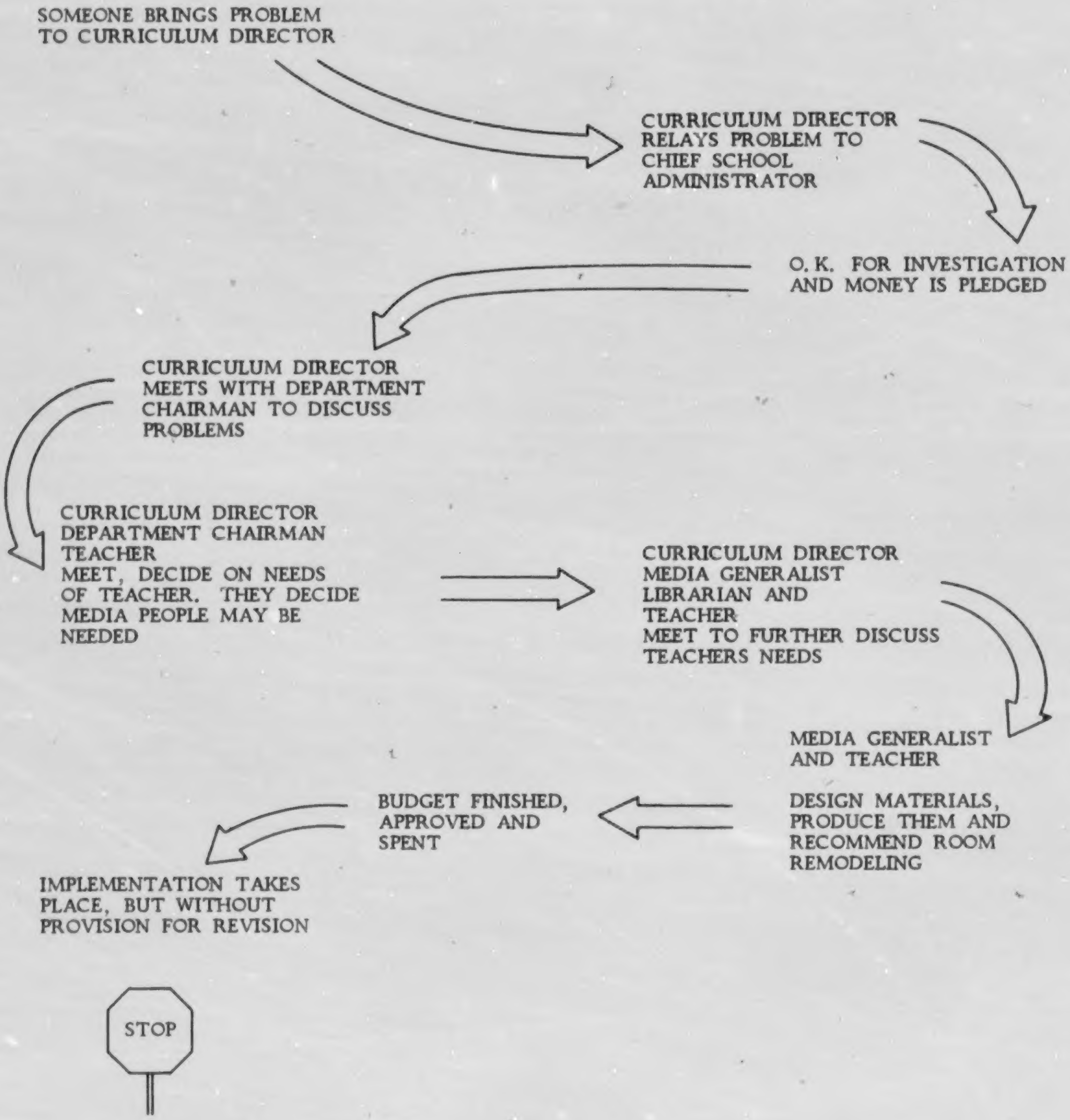
In working toward a systems approach, roles should not be assigned to specific persons. Instead functions will have to be assigned to specific individuals.

Initially this means that some individuals may have to assume many roles to perform appropriate functions, at appropriate times.

(Study Committee Report #2 continued)

## A TYPICAL TRADITIONAL APPROACH

CHART #1


SOMEONE BRINGS PROBLEM TO CURRICULUM DIRECTOR
CURRICULUM DIRECTOR RELAYS PROBLEM TO CHIEF SCHOOL ADMINISTRATOR
O. K. FOR INVESTIGATION AND MONEY IS PLEDGED
CURRICULUM DIRECTOR MEETS WITH DEPARTMENT CHAIRMAN TO DISCUSS PROBLEMS
CURRICULUM DIRECTOR DEPARTMENT CHAIRMAN TEACHER MEET, DECIDE ON NEEDS OF TEACHER. THEY DECIDE MEDIA PEOPLE MAY BE NEEDED
CURRICULUM DIRECTOR MEDIA GENERALIST LIBRARIAN AND TEACHER MEET TO FURTHER DISCUSS TEACHERS NEEDS
MEDIA GENERALIST AND TEACHER
DESIGN MATERIALS, PRODUCE THEM AND RECOMMEND ROOM REMODELING
BUDGET FINISHED, APPROVED AND SPENT
IMPLEMENTATION TAKES PLACE, BUT WITHOUT PROVISION FOR REVISION
STOP

* * * *

## III. The Transitional Stage (continued)

The argument for immediate role redefinition and role assignment has strong appeal but this procedure is fraught with complications. Few schools have inventoried their school personnel, at least not beyond the the traditional functions. Few school personnel can assume new roles with instant success. Clearly, role change takes time. Allowing individuals to assume different roles when needed, can serve as a method of identifying latent ability and can provide needed training during a transitional period.

In a transition to a complete systems approach persons will have to change in the following ways:

A. Persons must be willing to accept new roles as they are required to assume new functions.

B. Persons must know and be able to keep separate, the various roles they assume.

C. Persons must see their particular role(s) in relation to other roles.

Various degrees of status are usually attached to existing roles of the traditional school personnel. In the transition to a systems approach individuals may tend to:

A. Initially become confused between former status patterns and newly emerging status patterns.

B. Resist assignment of new functions or not volunteer for tasks.

To counter these problems, persons going through a transitional period in the adoption of a systems approach must:

A. Learn to separate status from people. That is, roles have status but people, per se, do not have status.

B. Be able to accept differing status roles for short periods of time, or accept differing status roles when assuming more than one role simultaneously.

In the early stages of a transition to a systems approach, functions must be spelled out before people are selected. It is important to note that people should be selected who can perform specified functions. Traditional roles do not determine the selection of people during a transitional stage.

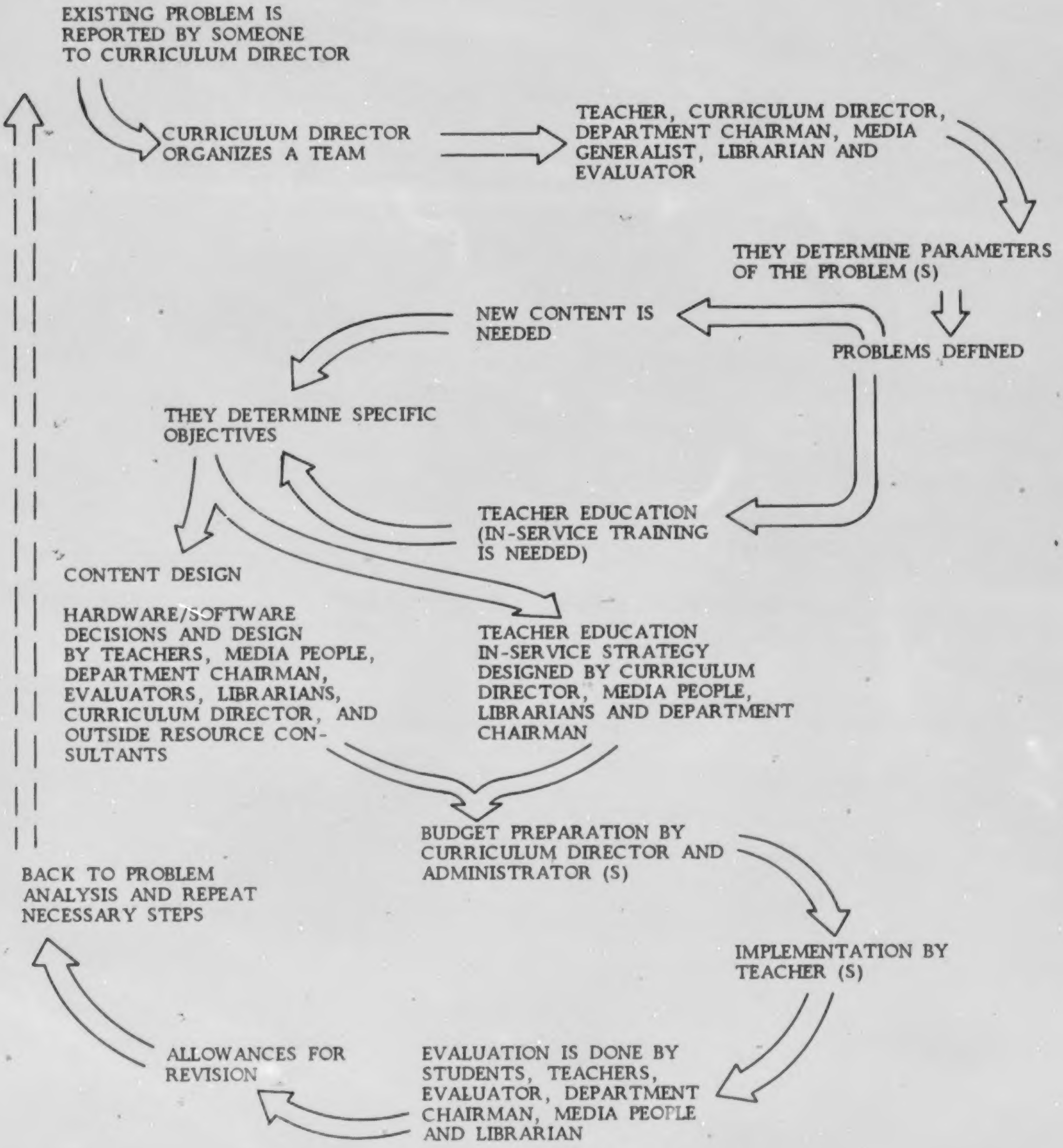
In a transitional system we can hypothesize that existing roles function quite differently in instructional problem solving situations.

(See Chart #2 on following page)

(Study Committee Report #2 continued)

## A TRANSITIONAL STEP TO A SYSTEMS APPROACH

CHART #2


EXISTING PROBLEM IS REPORTED BY SOMEONE TO CURRICULUM DIRECTOR
CURRICULUM DIRECTOR ORGANIZES A TEAM
TEACHER, CURRICULUM DIRECTOR, DEPARTMENT CHAIRMAN, MEDIA GENERALIST, LIBRARIAN AND EVALUATOR
THEY DETERMINE PARAMETERS OF THE PROBLEM (S)
PROBLEMS DEFINED
NEW CONTENT IS NEEDED
THEY DETERMINE SPECIFIC OBJECTIVES
TEACHER EDUCATION (IN-SERVICE TRAINING IS NEEDED)
CONTENT DESIGN
HARDWARE/SOFTWARE DECISIONS AND DESIGN BY TEACHERS, MEDIA PEOPLE, DEPARTMENT CHAIRMAN, EVALUATORS, LIBRARIANS, CURRICULUM DIRECTOR, AND OUTSIDE RESOURCE CONSULTANTS
TEACHER EDUCATION IN-SERVICE STRATEGY DESIGNED BY CURRICULUM DIRECTOR, MEDIA PEOPLE, LIBRARIANS AND DEPARTMENT CHAIRMAN
BUDGET PREPARATION BY CURRICULUM DIRECTOR AND ADMINISTRATOR (S)
IMPLEMENTATION BY TEACHER (S)
EVALUATION IS DONE BY STUDENTS, TEACHERS, EVALUATOR, DEPARTMENT CHAIRMAN, MEDIA PEOPLE AND LIBRARIAN
ALLOWANCES FOR REVISION
BACK TO PROBLEM ANALYSIS AND REPEAT NECESSARY STEPS

In essence, Chart #2 differs from a traditional approach in that it deploys people in different patterns. Changing deployment patterns, one of many changes occurring in a transitional stage, can open doors to at least four possibilities:

A. Maximum use may be made of available talent.

B. Experience and training may be given to people.

C. Hidden talent may be discovered.

D. Insight may be obtained into requirements of different roles.

Chart #2, however, is hypothetical. It serves to provide a description of how a problem in a transitional stage might be handled. In this chart, present roles have been depicted to show the shift of personnel to different functions. For example, in comparing Charts #1 and #2 we note that:

A. In the traditional approach. . .

   1. Media persons function as materials designers and information givers.

   2. Media persons are contacted by teachers who express some need for information about media applications.

B. In the transitional stage. . .

   1. Media persons function to help clarify, define, and develop strategies towards a newly discovered curriculum problem.

In addition, the phase at which certain persons contribute their skills differs between the charts. Media persons are contacted late in the problem-solving stage of the traditional approach. In the transitional stage, media people are brought on the scene immediately.

The transitional stage, by definition is only temporary. Determination of when a system is to be implemented may depend upon such factors as:

A. Readiness of existing personnel (their attitudes and training)

B. Availability of qualified personnel to function in newly created roles.

C. Prior time apportionment (if scheduled by budget considerations for example)

D. Availability of needed hardware and software.

(Study Committee Report #2 continued)

Implementing the final system may take various forms:

A. -as a series of sequential steps involving pilot studies or using specific physical locations (buildings) or grade levels, etc.

B. -as a gradual evolution without time deadlines.

C. -as a system of implementation constructed by an outside agency.

IV. Summary:

The step from traditional operations procedures to a systems approach cannot be effected instantly. A transitional stage seems apparent and necessary. The transitional stage provides experimentation, allows for maturity in handling new roles, gives an opportunity for discovering latent talent, and may indicate possible changes for the future system.

COMMITTEE MEMBERS:

Eugene L. Edwards, Jr., Co-Chairman
Mitchell P. Lichtenberg, Co-Chairman
Rose Hoffman, Recorder

Rebecca Brown
Ruth Cornfield
Marvin Dawson

David Gifford
Donald G. Potter
Earl Strohbehn

* * * *

## STUDY COMMITTEE REPORT #3

### CLIMATE OF ACCEPTANCE

Assumption: That some kind of an instructional system, supported by the board of education and the administration, will be incorporated into an already existing school district which includes elementary and secondary schools.

Problem: What steps must be taken to insure the acceptance of a new instructional system that will lead to improvement in instruction?

### Introductory Remarks

This is a design for receiving an instructional system. A principal concern is climate. We all recognize that excessive heat or cold can destroy equipment and the software that motivates its use. We design safeguards to protect this equipment and materials from that heat.

(Study Committee Report #3 continued)

Excessive heat or coolness can also reject and destroy the new instructional system and block its development, introduction, or continued use. Safeguards must be introduced to protect the system or, better yet, to prepare those who benefit from it.

This is but a guideline for such safeguards. It must be tailored to the individual situation. It is, however, as important to the acceptance of an instructional system as the system design itself.

Procedural Steps for Establishing a Climate of Acceptance:

I. Identify areas of resistance

  A. Internal resistance of school district employees caused by any one or combination of the following: (numbers do not indicate order of importance or chronology)

    1. Lack of knowledge
    2. Apathy
    3. Fear of displacement
    4. Fear of unemployment
    5. Fear of being observed
    6. Loss of personal contact and control in the instructional system
    7. Fear of classification
    8. Resistance to change in routine
    9. Threat of modification of existing facilities and/or creation of new facilities
    10. Change in philosophy--apparent contradiction of current objectives, if any

  B. External (local, state, national) resistance

    1. Finances
    2. Special interest groups

II. Strategies for overcoming resistance

  A. Involve the individuals who already recognize the problem and are amenable to change.

    1. Visitation to and/or presentation of successful operations
    2. Evaluation-comparison sessions

(Study Committee Report #3 continued)

B. Involve the individuals identified as resistors
    1. Rate of resistance
    2. Integrate resistors with positive groups slowly, taking those least resistant first
    3. Identify the most vocal individuals and work with them on a one-to-one basis

C. Key Group (The selection of the group members is to be determined on the basis of particular local circumstances. The appointment of this group should be made on a cooperative basis involving the Board of Education, Superintendent, Teachers' Organization, etc.)
    1. Selection and composition of any "key group" can and should be considered as an essential element to the development of a climate of acceptance.
        a. Three distinct divisions should be identified as integral parts of the key group:
            (1) A group of professional consultants with a suggested membership including representation from curriculum specialists, anthropologists, psychologists, and media specialists.
            (2) A group of professional personnel from within the structure implementing the instructional system with a suggested membership including representation from the administration, supportive services such as psychological and curricular, and from all levels of the instructional staff.
            (3) A group from the community with a suggested representation including membership from the organized community services such as the Chamber of Commerce, various civic and social organizations, influential community members, the political power structure, and interested citizens.
        b. Selection factors should include both personal and sociological considerations:
            (1) Known leadership within the community
            (2) Position within the community (illustrated by the elected officials, position of school superintendent, etc.)
            (3) Expressed interest (both positive and negative)
            (4) Vested financial interests
            (5) Willingness to become involved

2. Duties of the key group (after the key group is selected, they should be identified to the administration and faculty of the entire district).

   a. Key group informs the faculty and administration of the district of the instructional systems to be considered.

   b. Key group makes final recommendation to the board of education or superintendent on the instructional system to be incorporated.

   c. After school board approval and prior to a general release, the faculty and administration of the schools involved with the project will be notified. This information, as it is available, will include the following:

      (1) Type of instructional system selected

      (2) Project schools involved

      (3) Grade levels involved

      (4) Subject matter areas involved

      (5) Cost analysis

      (6) Time analysis

   d. The following priorities will be adhered to in further release of information:

      (1) Remainder of district administration at an executive session

      (2) Remainder of district faculty and in some cases the maintenance staff, by general bulletin (simultaneously)

      (3) Press - immediately following general teacher bulletin

      (4) Parents

      (5) Community groups

   e. Initiate a pilot program and establish a time schedule

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Note: Considerations regarding Instructional System Design, In-Service Training, and Personnel Functions, etc. are located elsewhere in the reports of other committees.

*******************************************************************

D. Develop confidence in the new instructional system

1. Establish need for behavioral goals

2. Encourage participation in the selection of learning experiences and the means to achieve that learning

3. Make it desirable for the teacher to want to participate
    a. Professional pride
    b. Financial reward
    c. Released time
    d. Job security
    e. Professional advancement
4. Emphasize the support facilities and supporting personnel
5. Demonstrate that a teacher can more effectively manage the classroom situation in the new instructional system
6. Demonstrate support for diagnosis of student achievement through the new instructional system
7. Demonstrate support for the preparation and application of the required media on the new instructional system
8. Demonstrate support for the design and modifications of the learning environment as required by the feedback data supplied by the new instructional system

E. Develop substantiation of effectiveness
    1. Reshaping teachers' goals to awaken and deepen their interest in behavioral objectives
    2. Teachers who are working actively in the instructional system must be involved in dialogue with both those teachers who will be newly involved in the instructional system and those not yet involved
    3. Teachers must participate in the evaluation of the new instructional system from the point of view of the state target objectives
    4. Teachers must participate in the informal evaluation of the role of the teacher as a professional
    5. Teachers must be kept informed about the effectiveness and receptiveness of the new instructional system as it relates to the student
        a. Selectively poll students
        b. Urge students to advance reactions directly to teachers
        c. Encourage teachers to engage their students in the design and preparation of systems
    6. Teachers must be kept informed about the administrative plans and public relations efforts exerted to acquaint the community groups and parents about the new instructional system

(Study Committee Report #3 continued)

7. The teachers should not be threatened by this feedback process. Data gathering characteristics of instructional systems allow the teachers to evaluate class progress and at the same time upgrade the performance of the instructional materials
8. Teachers should be encouraged to provide additional information based on his own experience as to ways the instructional system might be improved

F. Develop staff compatability with the learning situation and informational channels. In a classroom situation a teacher working without the support of an instructional system spends most of his time in the presence of children and with a minimum amount of contact with adults. By contrast, an instructional systems approach affords teachers the opportunity to share endeavors and have the support of interested adults. This is a desirable change in the role of teachers who now can be actively involved in cooperative group planning for diagnostics and evaluation activities, small group involvement, writing prescriptions for individualized study and media selection and presentation. In so working, teachers will be working in more professional capacities employing skills that range through a variety of activities.

COMMITTEE MEMBERS:

Arthur Lalime, Chairman
Ed Kaiser, Recorder

Albert Bailey
Dan Barr
Richard Boutelle
Carl Cottingham
David Crossman
Esther Dahl
William Evers
Orville Grisso
Alice Hild
William Horner
Burl Hunt
Steve Knudsen
Leone Lake
Leroy Mesedahl
Bruce Oldershaw
Ben Price
Homer Salley
John Tirrell
James Wise

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STUDY COMMITTEE REPORT #4

## TRAINING FOR SYSTEMS

### RATIONALE

Systems as discussed at this conference is primarily an approach. The systems approach is a scientific strategy applied to the solution of specific instructional problems.

The committee is concerned with training potential systems designers and implementers to function as a team. Since a system can be conceived at any level of operation, it is impossible to describe the training of systems personnel by role. The only solution available at the present stage is to describe the general training requirements needed to produce "systems capable" personnel.

It is realized that it will take some time to prepare an adequate number of systems designers. However, use can be made of persons presently upgrading their competencies through self-study of current literature and attendance at conferences concerned with instructional systems. If individuals are not available within the local school organization, outside consultants should be used.

### ASSUMPTIONS

I. Systems differ in size, complexity, and goals. Functions of individuals differ according to the size, complexity, and goals of the system. Special instruction and/or preparation is necessary for assuming functions in systems.

II. Most of the special training to operate as a functional unit in a system is available either in present graduate programs or in other disciplines.

III. The individuals responsible for instructional design should be competent in those skills related to total systems planning, implementation, evaluation, and revision. This competence is a necessary requirement for his acceptance by all members of the educational team.

IV. There may be many levels of involvement in a system. All media personnel will not necessarily be on the systems team at the design or strategy level. The degree of an individual's involvement will be related to his function.

V. It is possible to train media personnel to function in a position of leadership on the systems team. This training may be accomplished by either pre-service, in-service, or continuing education programs.

(Study Committee Report #4 continued)

VI. There is a variance of names or titles presently given to people working in the media field. Inconsistencies between titles and competencies tend to cause confusion and to relegate media personnel to the position of technicians.

## RECOMMENDATIONS

I. In order to make clear the capabilities of all educational team members, it is imperative that certain titles within the media field be related to specific competencies.

II. It is here recommended that a title designating a person with general instructional systems preparation be determined and applied to the individual responsible for total systems design at the highest system level.

III. The media profession should recognize the delineation of roles within the hierarchy of the decision-making process and actively direct its efforts in pre-service, in-service, and continuing education toward this end.

IV. The basic competencies of the individual responsible for total systems design encompass the following:

- A. A broad, general education on the undergraduate level or comparable practical experience.
- B. College or university training in:
    - 1. Techniques of analysis and synthesis
        - a. Skill in analyzing instructional and curriculum problems
        - b. Ability to break problems into components and synthesize solutions
    - 2. Educational Psychology with emphasis on instructional theory (e.g. Bruner and Gagne)
    - 3. Curriculum
        - a. Theory
        - b. Design
    - 4. Media
        - a. Ability to incorporate instruction into media forms
        - b. Management of programs combining personnel, materials, and facilities
    - 5. Behavioral sciences stressing human relations
    - 6. School administration and organization

C. Internship experience in

1. Administration
2. Curriculum
3. Human relations
4. Evaluations of large packages such as PSSC

V. All professional media personnel should be required to have formal preparation in systems design, e.g. flow charting, techniques of instructional analysis, etc.

VI. All professional members of any educational team should receive formal or in-service training in systems analysis and design. This assumes that a planned program will be necessary. Systems theory as it relates to instructional planning should be included in teacher-training programs. This recommendation is included to create an atmosphere of understanding and agreement with systems goals. It also provides basic understanding to all system team members as to their role or function in the educational endeavor.

VII. All educational team members should receive practice in role playing at various levels of decision-making and implementation. This includes sensitivity training and simulation, training to work with system packages and within systems packages. This will help the teacher identify, accept, and incorporate the systems approach into the instructional environment.

VIII. Universities engaged in the training of systems personnel should assess existing pertinent courses and should take steps to encourage the development of new offerings where necessary.

COMMITTEE MEMBERS:

Al Rosen, Chairman
Paul Brucker, Recorder

Ingmar Astrand
Charles Bollmann
Kenneth Fishell
Robert Heinich
David Little
Marie McMahan
Robert Sekerak
James Shaw
Guy Watson

* * * *

STUDY COMMITTEE REPORT #5

## THE FUTURES COMMITTEE

Objectives of the Committee:

The Futures Committee defined three tasks for itself:

I. To identify current change factors and tendencies in American education.

II. To project - and synthesize - these factors and tendencies into a logical description of the educational "systems" we are likely to have in the U.S. within the next fifteen years, especially noting effects of change on teachers, media specialists, administrators and other important professionals involved.

III. To speculate about the "visionary" kinds of educational "systems" we might consider "ideal" for the future.

***

I. Change Factors in American Education.

A. Implications of the emphasis shift in education from the craft level to the technology level.

B. Impact of growing "extra-establishment" educational force (e.g. the learning industry, industrial training, military training, etc.) on society and on the existing establishment - and the interaction of the two educational "agents."

C. Impact on the educational establishment of a technocratic, technologically oriented and scientifically conditioned society.

D. Impact of advanced technology (e.g. computers and satellites) on educational institutions - as, for example, in making feasible the national operation of curriculum.

E. Implication of the growing "guildism" of a highly conservative teacher group.

F. Impact of a growing number of para-professional specialists in the educational establishment.

G. Implication of a tendency to the conspicuous acquisition of hardware (or at least "richly ostensible" software).

H. Implications of a ritualized dependence on curricular objectives which have low efficiency yields, even when "systematized."

(Study Committee Report #5 continued)

I. Implications of national (or other) economic planning in setting the kinds and numbers of special skills required for a "balanced" society.

J. Tendency for a shift in emphasis in the teacher's roles to guidance and class management - and away from the presentational function, which increasingly is being assigned media.

K. Implications of the involvement of Federal monies and policies in educational planning and operations.

L. Implication of an increasing inquiry by various "publics" into educational goals, practices and "inhibition."

M. Implications of the population explosion.

N. Implications of the information explosion.

## II. Educational Systems and the Next Fifteen Years.

We have been able to give only the most cursory look at some of the significant change factors and tendencies present in American education today. Consequently our projection of the "shape of things to come" by the 1980's is, at best, extremely tentative and is offered to other conference participants only in a provocative spirit.

Some of us speculate that by the 1980's American education will be much changed - and still changing at an accelerating rate. At every level, technology will pervade the instructional operations of most schools and colleges, although somewhat more in the former than in the latter. The reasons behind this swing to technology will be complex, of course; nevertheless, we can probably identify several particularly important factors involved. The social synergy represented by a combination of the population explosion, the knowledge explosion and a pronounced technocratizing of American power structure will probably lead to a general demand that more people learn more skills more quickly - and with a more demonstrable efficiency. Because the multiplication of traditional resources to meet these demands for higher educational productivity and efficiency is not feasible - or perhaps not even possible - it will be necessary for education to turn to systems-analysis, and thereby to technology (By technology, we mean in the content of this discussion, a behavioristically-governed methodology for devising and operating media-based, learning systems.) The various forces in the profession and elsewhere in the power structure which have largely denied technology to education in the past will have begun to lose their dominant influence - as will those educational administrators who have heretofore misunderstood instructional technology to be merely the conspicuous use of hardware in peripheral communications tasks.

In consequence of the rise in the application of technology to the teaching-learning process, there will be by the 1980's a significant emphasis shift in the roles taken by teachers. Individual direction and learning management will largely replace presentation as the primary activities of the teacher. At the same time, most schools will have a staff of para-professionals assigned to relieve teachers of burdensome clerical and proctoring duties. One effect of these changes will probably be a reversal of the current drift by teachers into a narrow, craft-level "guildism" which has thus far tended to help block the technological take-off.

We like to imagine that the so-called media field will be professionally upgraded so as to enable those in it to assume a variety of different roles, but in divisions of labor appropriate to their backgrounds and training. After new and rigorous graduate training, some persons in the field will undertake the very sophisticated roles of learning systems designers, supervising psychometrists and systems managers. Others will be assigned less sophisticated - but nonetheless professional - roles as media producers, storage-and-retrieval specialists, distribution and transmission planners and the like. There will also be a large number of para-professionals to facilitate the increased media output required.

Some of us have conjectured that advances in technology itself, (e.g. particularly in connection with computers and communications satellites) may begin to have by the 1980's a certain structural impact on the organizational patterns of the educational establishment; namely, in a slight shift in curricular control from local toward national (or at least regional) authorities. This is not to say that within that time the American school and university systems will have been clearly centralized, but rather that an increased - and increasing - number of curricular decisions will be made, implemented and enforced by other-than-local authorities. The new sources of authority will include, in one way or another, the Federal government, regional consortia, and the so-called learning industry. Some of us believe this development will take place primarily because new hardware forms will make possible the design and operation of curriculum elements which would be too expensive for merely local application. There are others among us who also believe that this shift will occur because of an ineluctable drift toward political centralism which also implies economic and educational centralism. Our general estimate is that these structural adjustments will be made with relatively little conflict between the various local, regional and national parties-at-interest. This is not to suggest, however, that there will not be some sharp "growing pains" as the new educational structures emerge.

## III. Some Visionary Speculations of the Future:

(The committee made sweeping assumptions about the sources of economic support, the availability of highly trained personnel and the existence of favorable climates of acceptance.)

(Study Committee Report #5 continued)

A. The "formal" education of each citizen will be a life-long process made possible by means of an international system of special learning centers. *

B. The classroom as we know it today will disappear, to be replaced by interactive learning centers in all residences and places of work. The centers will be inter-connected to a variety of information banks, instructional resources, testing processors, etc. *

C. Learning experiences of a structured sort will begin prior to birth by means of complex electronic and chemical stimulation "programs."

D. Lasers will make possible the home-projection of holograms (three-dimensional color pictures) which will give the illusion of "being there."*

E. Complex simulator apparatus will make possible SITE systems: Simulated Instantaneous Total Environment. These will enable a total environment to be simulated for the total sensorium.

F. Transportation systems will be so advanced that persons needing to study in an actual (i. e. non-simulated) environment will be able to do so with great rapidity and minimal travel effort, even to points in outer space.

G. Learning will be chemically aided. *

H. Rote learning will become less necessary with the availability and use of an electronic "memory cube" carried on the person, by which a wide variety of helpful data could be quickly retrieved.

I. Personal and mass communication via electronic systems will be facilitated by the availability of receivers no larger than a pen or wrist watch. *

J. Penal institutions will become obsolete by virtue of the fact that personality adjustments will be made possible by chemical and electronic processes, thus eliminating the need for punishment or a long period of rehabilitation.

K. Instantaneous translation of oral and written materials will be accomplished electronically.

*Note that such a development is already technically possible.

COMMITTEE MEMBERS:

Paul McClendon, Chairman
Philip Carlock
Edward Dawson
George Hall
James Hardie
Fred Knirk

## STUDY COMMITTEE REPORT #6:

## DEVELOPING INSTRUCTIONAL SYSTEMS

SUBCOMMITTEE A

David Guerin, Chairman
Burnett Ellis
Norman Felsenthal
Ernest Lamborn
Stanley McIntosh
Peggy Sullivan

SUBCOMMITTEE B

Donald Nicholas, Chairman
Gordon Blank
Richard Stowe
Howard Thorne

SUBCOMMITTEE C

Robert Hunyard, Chairman
Lee Cochran
Lida Cochran
Dennis Myers
John Payne

JOHN BARSON, GENERAL CHAIRMAN

### Introduction:

During their two-day study period, the members of Group #6 undertook an examination of their experiences in simulating a model for instructional system development. It was their opinion that the value which systems analysis and systems synthesis holds for developers of instructional schemes and the newer media cannot be realized unless the steps of the system development model can be translated into productive procedures by practitioners.

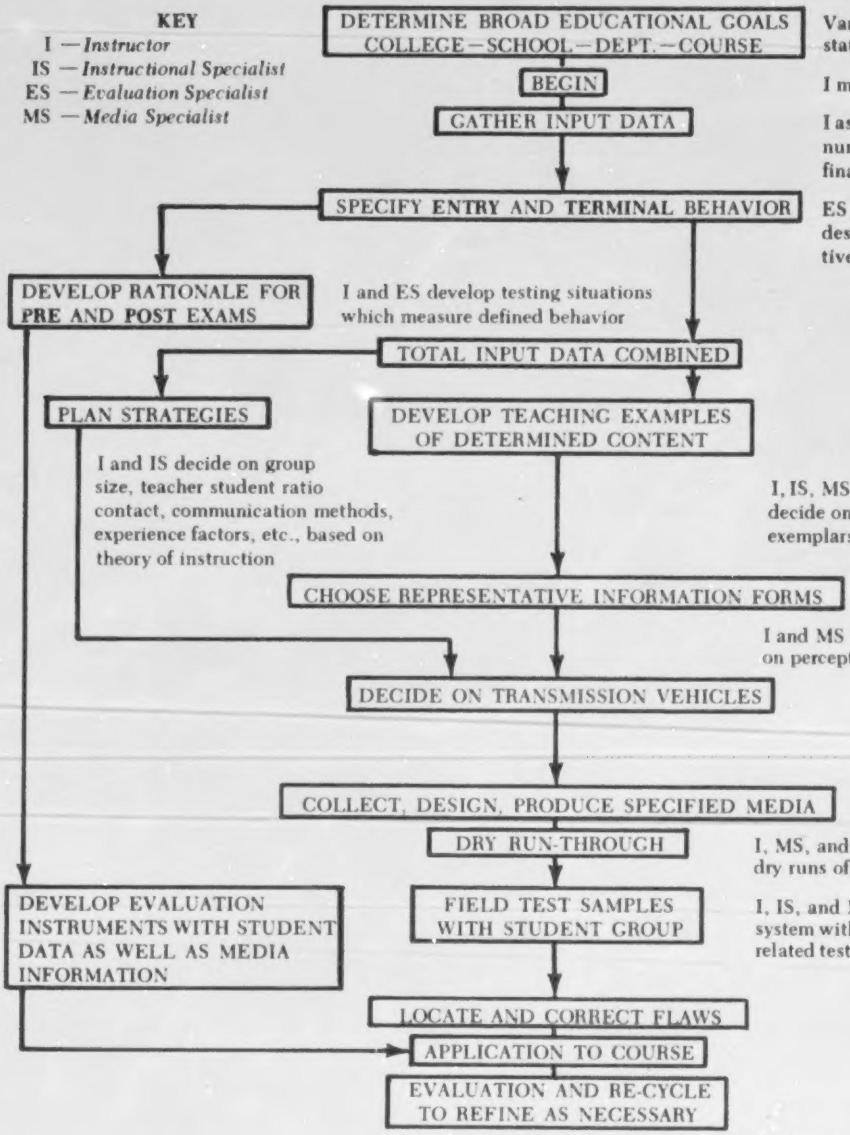
Accordingly, members of this group attempted to measure the utility of a currently-used model for the implementation of media in instructional programs. They followed specified development procedures in seeking solutions to three hypothetical problems of instructional design.

| | |
|---|---|
| Problem #1 | Establish learning experiences to remedy the lack of ability in composition exhibited at the college freshman level. |
| Problem #2 | Design curriculum offerings which are consonant with the purposes and resources of a two-year community college. |
| Problem #3 | Provide in-service faculty members with competencies needed to implement media in their courses of instruction. |

The development model (see page 72) was devised in the 1963-65 Instructional Systems Development Project, sponsored by the United States Office of Education at Michigan State University and subsequently studied further (1965-67) at Syracuse University, University of Colorado, and San Francisco State College. In the trials at each of these institutions a full year of development time was allotted to each of the courses treated. Acknowledging the brief hours provided by the conference for the simulation exercise and other limitations, the members of Group #6 attempted to carry out the required deliberations in accordance with the orientation provided by John Barson at the opening sessions of the Okoboji Conference. Subcommittees A, B, and C dealt with problems (1), (2), and (3) respectively. Subcommittee group members assumed the roles called for by the model in accordance with their own interest and expertise. Time limits for each step of deliberation were observed so that experience could be obtained in more than one development phase. These curbs

## A FLOW CHART* OF PROCEDURES FOR ANALYSIS OF INSTRUCTION AND IMPLEMENTATION OF NEWER MEDIA OF COMMUNICATIONS

**KEY**
I —*Instructor*
IS —*Instructional Specialist*
ES —*Evaluation Specialist*
MS —*Media Specialist*


DETERMINE BROAD EDUCATIONAL GOALS COLLEGE—SCHOOL—DEPT.—COURSE
BEGIN
GATHER INPUT DATA
SPECIFY ENTRY AND TERMINAL BEHAVIOR
DEVELOP RATIONALE FOR PRE AND POST EXAMS
TOTAL INPUT DATA COMBINED
PLAN STRATEGIES
DEVELOP TEACHING EXAMPLES OF DETERMINED CONTENT
CHOOSE REPRESENTATIVE INFORMATION FORMS
DECIDE ON TRANSMISSION VEHICLES
COLLECT, DESIGN, PRODUCE SPECIFIED MEDIA
DRY RUN-THROUGH
DEVELOP EVALUATION INSTRUMENTS WITH STUDENT DATA AS WELL AS MEDIA INFORMATION
FIELD TEST SAMPLES WITH STUDENT GROUP
LOCATE AND CORRECT FLAWS
APPLICATION TO COURSE
EVALUATION AND RE-CYCLE TO REFINE AS NECESSARY

Various curriculum committees state goals in broad terms

I meets with IS

I assesses course limits, number of students, available finances, materials, etc.

ES joins I and IS to assist in description of specific objectives, content, and behavior

I and ES develop testing situations which measure defined behavior

I and IS compile completed input information

I and IS decide on group size, teacher student ratio contact, communication methods, experience factors, etc., based on theory of instruction

I, IS, MS, and other resource persons decide on information sources and exemplars

I and MS determine best models based on perception and learning theory

I and MS determine which of various media is called for at points within system

I, MS, and IS conduct representative dry runs of system packages

I, IS, and MS check feasibility of system with live audience and related test samples

*Note: Information feedback loops have been deleted from this illustration.

were set, despite the risk that premature termination of discussions could result in incomplete data output and affect the quality of treatment for subsequent decision steps.

After approximately six hours of simulation sessions, members of the problem-solving groups were asked to report on three aspects of their experiences:

1. Comment on the observed usefulness of the model procedures for problem analysis and synthesis of solutions.
2. Indicate changes in the model procedures you feel would strengthen their usefulness for you.
3. What techniques did you find necessary or helpful to employ in operating with the model?

In addition to the information provided by responses to these questions, the committee agreed that the substance of their deliberations may prove valuable to readers in indicating the nature of data generated by system development work. Samples of these results follow each subcommittee report. The group hastens to add that this information is offered purely for illustrative purposes and not necessarily as examples of excellence or detail in planning. This disclaimer is offered in recognition of the extreme limitation of time under which they labored.

## Subcommittee A

Problem: Establish learning experiences to remedy the lack of ability in composition at the college freshman level

Roles of the Subcommittee members in relation to the model flow chart:

| | |
|---|---|
| Instructor | Stanley McIntosh |
| Student | Peggy Sullivan |
| Instructional Specialist | David Guerin, Chairman |
| Media Specialist | Burnett Ellis |
| Evaluation Specialist | Norman Felsenthal |
| Administrator | Ernest Lamborn |

### I. Discussion of the Model Flow Chart

A. Usefulness of the Model Flow Chart

It was useful as a checklist to see whether any necessary steps had been overlooked.

B. Changes in the Model Suggested by our Attempt to Use it--and Questions Raised

1. The distinction between "input data" and "entry behavior" was not clear. Is the "input data" confined to merely "statistical data?"

2. Isn't "content" implicit in behavior? Can it be separated?
3. Should "time available" be added to the specific illustration mentioned as examples of "input data."
4. There was some confusion about the place in the sequence of the items listed off to one side of the flow chart. It seemed that they might as well be placed in the linear sequence.
5. It seemed illogical not to include the media specialist at the point where strategies are being planned.
6. It is not clear what is meant by "teaching examples."
7. The difference between "information forms" and "media" is not clear.
8. It is not clear what is meant by "develop evaluation instruments with student data as well as media information". Does this mean to develop instruments to evaluate the effectiveness of the media?

C. Techniques Required in Order to Operate with the Model

1. It was found best to begin by free-wheeling without reference to the flow chart.
2. The leadership role must be shared.
3. Terms used for some of the categories need to be changed or an annotation included to explain the terms used where they are not self-evident.

## II. Application of the Model

After first brainstorming the problem without reference to the model flow chart, the committee turned to the chart and responded to the categories therein as follows: (None of the categories was fully developed but sufficient sample entries were made to indicate the thinking generated)

A. Broad Goals of the Course

1. To develop and improve written communication skills.

B. Input Data

1. Course to be given at 12th grade.
2. Three (3) classes of 25 students each.
3. Course limited to native speakers of English who are college bound.
4. Extra budget of $1,000 for special instructional materials and $4,000 for released time. (2/5ths teachers salary)

(Study Committee Report #6 continued)

C. Entry Behavior

  1. Students have been shown to be average or below on standardized tests of composition.

D. Terminal Behavior

  1. Demonstrate in writing the ability to organize thoughts in a logical, coherent manner.
  2. Distinguish between examples of good and bad exposition.
  3. Write readily (i. e. fluently) under the pressure of time.
  4. Distinguish between denotative, connotative, contextual and structural meanings.

E. Total Input Data Combined (see above)

F. Pre and Post Examinations and Development of Evaluation Instruments

  1. Standardized tests.
  2. Before and after exercises.
  3. Reports on writing skills from teachers in other areas.
  4. Analysis of grade point averages and English grades from colleges.
  5. Run a reading interest profile.

G. Plan Strategies

  1. Sensitizing experiences (debates, 3-dimensional exemplars of perception, open ended films, etc.)
  2. Bring together within same course associate teachers who will assist in covering various aspects of communication (logic, perception, communication theory, etc.)
  3. Give experiences in structuring through the application of the organizing concepts (laws, principles, etc.) of one discipline to another. For example, "apply the concept of entropy to Economics."
  4. Give an exercise in expressing something (i. e. communicating) non-verbally (e. g. planning a film or some other set of visuals).

H. Develop Teaching Examples

  1. Take examples of good organization from science and show their application to good composition.

I. Choose Representative Information Forms

  1. The examples from science should be presented graphically rather than verbally.

(Study Committee Report #6 continued)

J. Decide on Transmission Vehicles

| Activity | Media |
|---|---|
| Readings | Books and kits |
| Debate | PA system and tape recorder |
| Perception | 3-dimensional model of the trapezoidal window and 16mm film on perception |
| Problem situation | Open-ended film (Eye of the beholder) |

K. Collect, Design, and Produce Specified Media

Secure or produce a film showing the successive series of polishings done on a manuscript before it goes to press.

L. Dry Run-Through

M. Field Test Samples with Student Group (the experimental course is itself the field test.)

N. Locate and Correct Flaws

O. Evaluation and Re-Cycle

## Subcommittee B

Problem: Design curriculum offerings which are consistent with the purposes and resources of a two-year community college.

Roles of the subcommittee members:

| | |
|---|---|
| Administrative Specialist | Gordon Blank |
| Instructional Specialist | Donald Nicholas, Chairman |
| Media Specialist | Howard Thorne |
| Evaluation Specialist | Richard Stowe |

## I. Evaluation of the Model Flow Chart

A. Usefulness of the Model Flow Chart

1. The flow chart would be most applicable to development of a particular course or for solving problems relating to a particular course. It would need to be greatly modified to fit a more general situation such as the development of a school curriculum, or other large instructional system.

2. Limitations which might be imposed when specifying input data - specifically, financial resources - might limit innovative ideas. Perhaps a more "free wheeling" approach should be applied initially and then modified as resources are finally determined.

(Study Committee Report #6 continued)

B. Suggested Changes to the Flow Chart for Use at the "Total Curriculum" Level

1. Under "Locate and Correct Flaws" a block should be inserted labeled "Determine and Deploy Resources." An arrow should lead from this block back up to "Total Input Data Combined." The rationale for this change is contained in (A) above.

C. Techniques Found Most Effective in Using the Flow Chart

1. Brainstorming was found to be useful in bringing out alternatives.

2. Role playing was found to be most effective. The switching of roles was effective in liberating ideas and in helping each participant to be aware of all aspects of each problem considered.

II. Application of the Model (Role-playing was used to develop the modeling exercise.)

A. Broad Goals of the Model

1. To develop a comprehensive curriculum reflecting a diversity of programs in order to meet the academic and occupational goals of a diverse and non-select student body.

B. Input Data

1. Umgowa Community College is a two year college with a non-select student body. It is state supported, with a local board of trustees.

2. The community is semi-industrial, partly rural, with both skilled and unskilled labor force. It is anticipated that 500 students will be enrolled in academic, vocational, or technical programs, and an unspecified number of students enrolled in non-credit adult education courses.

C. Entry Behaviors

1. General - applicant must be a resident of the community, a holder of a high school diploma or be 18 years of age.

2. Academic program - high school; 33%-ile on national norms and high school class standing.

3. Vocational program - 18.5 years of age.

4. Technical program - 18.5 years of age and a high school diploma or equivalent.

5. Adult education - 18.5 years of age.

D. Terminal Behavior

1. Academic program - demonstrate proficiency in general education subject areas as specified by the faculty. (Humanities, Math, Social Sciences, Natural Sciences)

(Study Committee Report #6 continued)

2. Technical and vocational program - demonstrate proficiency in the skills and competencies of the particular program as specified by committees of the faculty with the advice of lay representatives of the particular occupational areas.

3. Adult education program - each adult student shall specify his own degree of success.

E. Total Input Data Combined (see above)

F. Develop a Rationale for Pre and Post Exams.

Standardized tests shall be used for initial placement in the various programs in conjunction with high school achievement records and counseling interviews.

G. Plan Strategies

Individualized instruction will be emphasized. Because of the time needed to develop a complete individualized instructional program, it was decided to phase into the program over a period of three years. The first year, during which time a rather traditional instructional program would be underway, would be devoted to the development of course syllabi and beginning development of software for the individualized instructional program; also, at this time, faculty in-service education would be stressed. During the second and third years, virtually all software would be produced and hardware installed to maximize individualized instruction.

H. Develop Teaching Examples: Not applicable to the design of this type of system.

I. Choose Representative Information Forms: Time did not permit the committee to complete this section of the flow chart.

J. Decide on Transmission Vehicles:

Through brainstorming techniques, the committee listed the following as possible transmission vehicles for the maximizing of individualized instruction. Time did not permit further refinement of the list.

1. Audio-tutorial
2. Team teaching
3. Programed instruction (books or tape mediated)
4. Dial access
5. Unstructured learning
6. Lecture

7. Closed-circuit television
8. Variable scheduling of classes
9. Learning contracts
10. Work experience

Because of time limitations the exercise in simulating the flow chart model terminated at this point. Items in the flow chart not discussed included:

K. Collect, Design, Produce Specified Media
L. Dry Run-Through
M. Field Test Samples with Student Group
N. Locate and Correct Flaws
O. Evaluation and Re-Cycle

## Subcommittee C

Problem: Develop an institute for the improvement of college and university teaching

Subcommittee members:

| | |
|---|---|
| Robert Hunyard, Chairman | Dennis Myers |
| Lee Cochran | John Payne |
| Lida Cochran | |

### I. Discussion of the Model Flow Chart

A. Usefulness of the Model

1. The model was found to be useful as a checklist, a guideline, a map of a process, a format for the analysis of problems.
2. The model also demonstrated its complexity and the need for experienced leadership during problem-solving in systems design.
3. Our experience with the model demonstrated the complexity of human interaction in working toward specified goals.
4. This model demands extreme specificity of information.

B. Changes Suggested for the Model

1. The terminology of the steps in the flow chart needed additional explanation by a person experienced in system design.

(Study Committee Report #6 continued)

2. Persons uninitiated in the process will have difficulty completing the entire process and this implies that the entire team must be dedicated to the proposition to complete the process.

3. Neat orderly appearance of the chart belies its complexity.

C. Techniques Required to Operate with the Model

1. The group technique of brainstorming was found helpful in determining course content. It is suggested that this technique would be helpful in uncovering additional information for other aspects of the chart.

2. The common forms of group human interaction, i.e. discussion, compromise, argumentation, and justification were employed to arrive at most of the points of agreement in the example.

## II. Application of the Model

A. Broad Goals of the Course

1. To produce a system design for an institute involving non-media oriented college and university faculty and/or prospective faculty members for the purpose of improving learning in each of the participant's classes.

B. Input Data

1. Two-semester course
2. Twenty participants
3. 24-30 credits
4. Adequate facilities, budget, and staff
5. Participants will be in full-time attendance

C. Entry Behavior

1. Participants will be instructors that are not now using media but feel that knowledge of media and its utilization would improve his instruction.

D. Terminal Behavior

1. To identify those skills, attitudes and a body of knowledge which will enable each participant to:

   a. Organize their classes on a multi-media basis paying particular attention to:

      (1) Objectives
      (2) Teaching strategies

        (3) Materials
        (4) Student deployment
        (5) Evaluation

    b. Plan, produce and utilize all media (with special emphasis on the values and shortcomings of each medium with respect to requirements for motion, color, intensity, etc.)

    c. Organize materials into a system of instruction which describes the function of each medium in the attainment of specified objectives.

    d. Organize materials, information, etc. into sequential learning steps.

    e. Test, validate and revise system as required, including any updating deemed necessary.

2. To provide for each participant instruction in such related fields as educational psychology, learning theory, and methods of instruction.

E. Content

See "Proposed Units of Instruction." (listed below)

F. Other Procedures

Not completed because of lack of time.

III. Proposed Units of Instruction

FIRST SEMESTER

1. Educational Psychology - Learning Theory - Perception
2. Basic Media (Revised for College Level)
3. Non-photographic - Photographic Materials
4. Course Organization - Presentation Techniques
5. Tests, Measurements, Evaluation - Programed Instruction

SECOND SEMESTER

1. Television Techniques
2. New Electronic Hardware, i.e. Dial, Computer, Student Response Systems
3. Utilization, Strength & Weakness of each Medium - Sources & Selection
4. Implementing Materials into the System-Practice Teaching

NOTE: If students had previous courses in any of the listed courses, they would be provided with courses in related fields of mass communication, or other subjects that would contribute to the students knowledge.

**********

# GLOSSARY OF TERMS

The following terms were formulated for use by other committees and for the assistance of all delegates during the course of this conference:

AUTOMATION: Is the state resulting from a machine as the source of immediate control and self-correction in the performance of either sensory or motor tasks.

SYSTEMS APPROACH: An integrated, programed complex of instructional media, machinery, and personnel whose components are structured as a single unit with a schedule of time and sequential phasing.

SYSTEMS DESIGN IN EDUCATION: Provides a conceptual framework for planning, orderly consideration of functions and resources, including personnel and technical facilities such as television, the kinds and amount of resources needed, and a phased and ordered sequence of events leading to the accomplishment of specified and operationally defined achievement.

GENERAL SYSTEM: Any entity, conceptual or physical which consists of interdependent parts; which displays activity, i.e. behavioral system; and is subject to control by human beings.

INSTRUCTIONAL SYSTEM: A complex consisting of the following components: Learner(s) and a combination of instructor(s), material(s), machine(s), and technician(s), given certain inputs and designed to carry out a prescribed set of operations. This set of operations is devised, ordered and revised through feedback according to the most recent and pertinent evidence from research and expert opinion such that the probability of attaining the output, specified behavioral changes in the components is maximal.

Robert Heinich, Chairman, Committee on Terminology

* * * *

Appendix B

## SHARING SESSIONS
## TOPICS AND DELEGATES WHO MADE THE PRESENTATIONS

The following is a list of individual delegate demonstrations ("Show and Tell") not given during the conference general sessions but presented to interested groups of delegates after the general sessions adjourned. All sharing sessions were coordinated by Marie McMahan.

| | |
|---|---|
| Film report of the Michigan State University Instructional Development Program. | John Barson |
| Innovative program at Washington State Department of Public Instruction | James Hardie |
| Teacher education in media program and supporting Educational Resources Center at Western Michigan University | Marie McMahan |
| Instructional materials designed for specific teaching (i. e. communication) problems by teachers working with a media specialist | David Guerin |
| Transparencies on basic media research. Developed by the Center for Research in Educational Media Design, The University of Iowa, Iowa City | Lee Cochran |
| Slide set on system development in the public schools | Leroy Mesedahl |
| Slide set on USOE Media Survey in Connecticut | Arthur Lalime |
| Slide set on audio-video remote access systems at Ohio State, Oklahoma Christian, Florida Atlantic, etc. | David Crossman |
| Videotape of the Somerset County Media Center | Edward Dawson |
| Slide-tape series "What is DAVI?" | Lida Cochran |
| Film on communication and educational innovation. Developed by Robert Wagner for USOE | |
| Slides on regional educational service agencies | David Little |
| A system for instruction in high school social studies | Mitchell Lichtenberg |
| A system for computerized film distribution | Robert Hunyard |
| Flow chart for a geology course | Burnett Ellis |
| Videotape - "The Integrity of Folksongs" | Norman Felsenthal |

* * * * * *

# EDUCATIONAL INNOVATIONS IN 7,240 SECONDARY SCHOOLS - AN ABSTRACT

[illegible]e following is an abstract of information presented by William Kunzler to the Okoboji delegates during the Fourth General Session of the 1967 Conference. Persons interested in a more detailed report of the study may contact Mr. Kunzler, Iowa Educational Information Center, The University of Iowa, Iowa City, Iowa 52240.

During the fall of 1966, questionnaires were sent to 10,266 regionally accredited high schools in the fifty (50) states, District of Columbia, overseas dependents' schools, and to the extra-territorial schools. The questionnaire inquired as to the practices of the schools with regard to twenty-seven educational innovations. Innovation was defined as something not generally in use and the twenty-seven (27) specifically listed in the questionnaire included:

1. PSSC Physics
2. CHEM Study Chemistry
3. CBA Chemistry
4. SMSG Math
5. UICSM Math
6. ESCP Physical Science
7. SSSP Physical Science
8. Humanities Course
9. Television Instruction
10. Programmed Instruction
11. Teaching Machine
12. Language Laboratory
13. Data-Processing Equipment
14. Telephone Amplification
15. Simulation or Gaming
16. Flexible Scheduling
17. Team Teaching
18. College Credit Courses
19. Nongraded Program
20. Teacher Aides - Paraprofessionals
21. Honor Study Halls
22. Work-Study Program
23. School-Within-A-School
24. Cultural Enrichment Program
25. Student Exchange Program
26. Optional Class Attendance
27. Extended School Year

Approximately 72% or 7,240 responded to the questionnaire. Data on the status of seven (7) innovations classified as technology follows:

NUMBER AND PERCENTAGE OF SCHOOLS USING EACH INNOVATION

| Innovation | Fully Implemented | | Trial Basis | | Total | |
|---|---|---|---|---|---|---|
| | # of Schools | % | # of Schools | % | # of Schools | % |
| Technology | | | | | | |
| Television Instruction | 434 | 6.0 | 765 | 10.6 | 1199 | 16.6 |
| Programmed Instruction | 379 | 5.2 | 1711 | 23.6 | 2090 | 28.8 |
| Teaching Machines | 227 | 3.1 | 696 | 9.6 | 923 | 12.7 |
| Language Laboratory | 4296 | 59.3 | 879 | 12.1 | 5175 | 71.4 |
| Data Processing Equipment | 1261 | 17.4 | 791 | 10.9 | 2052 | 28.3 |
| Telephone Complification | 173 | 2.4 | 210 | 2.9 | 383 | 5.3 |
| Simulation or Gaming | 355 | 4.9 | 762 | 10.5 | 1117 | 15.4 |

Some conclusions drawn from the data include:

1. The national mean of innovations in use was 6.1; that is, the average high school has adapted 6.1 of the 27 innovations listed.
2. Some schools, 8.9 percent or 637 schools, had adapted 12 or more of the listed innovations.

(continued)

3. Highly innovative schools were most frequently found in Connecticut, New York, Massachusetts, Delaware, Washington, Rhode Island, California, and Virginia. Between 15 and 20 percent of the high schools in these states were "high innovators" (12 or more innovations).

4. Larger schools with enrollments greater than 1500 pupils showed a much greater tendency toward innovation than smaller schools.

5. Schools with larger per pupil expenditures tended to be more innovative than less wealthy schools but the trend was not as sharp as might be expected.

6. Only a small difference in innovative trend was noted among private, public and parochial schools. Educational institutions in these three categories averaged 6.7, 6.1, and 5.5 innovations respectively.

7. Location of the high schools who responded to the questionnaire was a factor in innovative trend. Schools in rural or small town settings (under 5,000 population) were considerably more conservative in their adaption of the 27 innovations than schools in large cities, medium size cities, or suburban areas. Rural and small town schools cited 4.1 and 4.3 innovations while suburban schools averaged 7.6. Large cities (over 400,000) and medium cities averaged 7.2 and 6.7 respectively.

* * * *

Appendix D

# INSTRUCTIONAL SYSTEMS IN USE - A PARTIAL LISTING

During the Okoboji Conference, several delegates suggested that a listing of educational agencies currently utilizing one or more instructional systems might be of interest and value. Delegates who knew of systems in operation were asked to submit the names of possible users to the summary report recorder, Norman Felsenthal. Questionnaires were mailed to those persons cited as possible users.

The following table is a compilation of information from returned questionnaires. This listing probably represents only a fraction of those educational institutions utilizing instructional systems today. Each of the respondents indicated he would answer letters of inquiry requesting further information. Several of the respondents have either published articles or prepared printed materials describing their systems.

ELEMENTARY

| | LOCATION | BRIEF DESCRIPTION | CONTACT PERSON | AVAILABLE LITERATURE |
|---|---|---|---|---|
| 1. | Temple City Unified School District<br>9516 E. Longden Avenue<br>Temple City, California | Intensive utilization of various media in the teaching of fifth grade social studies | Joseph M. Conte | Educational Screen September, 1967, p. 27 |
| 2. | Boulder Valley School District<br>P. O. Box 186<br>Boulder, Colorado 80302 | Many curriculum "modules" developed to match characteristics of individual students in language arts (1-6) instruction | Paul Nachtigal | Write for a printed summary |
| SECONDARY | | | | |
| 3. | West Hartford Public Schools<br>7 Whiting Lane<br>West Hartford, Connecticut | Dial Acess with 24 program capability (8 video, 16 audio) with planned expansion to 120 program capability (20 video, 100 audio) | Garrett Mitchell<br>Title III Project Director | See AV Instruction, May, 1967, pp. 446-9 |
| 4. | Norwalk High School<br>East Avenue<br>Norwalk, Connecticut | Foreign language tapes developed for use in five language labs | Dr. William Jassey<br>Foreign language coordinator | None |
| 5. | LaPuente Union High School District<br>455 N. Glendora Avenue<br>LaPuente, California 91744 | Development of a flexible instructional system for continuation* high school students | Irving R. Rem<br>Coordinator of Federal projects | Write for project abstract |
| 6. | Township High School District #214<br>799 W. Kensington<br>Mt. Prospect, Illinois 60056 | Extensive use of student response system (Edex) 168 programs developed | Charles J. Miller<br>Instructional Coordinator | None |

*continuation students are those not attending graded high schools but rather combining part-time jobs with part-time attendance at ungraded high schools.

(continued)

|  | LOCATION | BRIEF DESCRIPTION | CONTACT PERSON | AVAILABLE LITERATURE |
|---|---|---|---|---|
| 7. | Carbondale High School<br>200 N. Springer Street<br>Carbondale, Illinois 62901 | Audio dial access system including tape production. 75% of students involved | Gerald Cuendet<br>Principal | Write for printed description |
| 8. | Greenwich Public Schools<br>P. O. Box 292<br>Greenwich, Connecticut 06830 | Dial access into 10 classrooms and 8 carrels; development of programs in biology and humanities | Dr. Kenneth Coulter<br>Deputy Superintendent | None |
| UNGRADED |  |  |  |  |
| 9. | Rochester Area School District<br>540 Reno Street<br>Rochester, Pennsylvania 15072 | Entire faculty developing behavioral system for curriculum construction through Title III grant | Peter Napoli<br>Project director | None |
| JUNIOR COLLEGE |  |  |  |  |
| 10. | Florissant Valley Community College<br>3400 Pershall Road<br>Ferguson, Missouri 63135 | Multi-media and CAI programs in elementary algebra. College also has dial access capabilities in several subjects - used by 50% of students | Raymond Bryant<br>Asst. Professor of Mathematics | None |
| 11. | Florissant Valley Community College<br>3400 Pershall Road<br>Ferguson, Missouri 63135 | CCTV for salesmanship courses in business education | Dr. Norman Bucher<br>Chairman, Business Division | None |
| 12. | Forest Park Community College<br>5600 Oakland Avenue<br>St. Louis, Missouri 63110 | Audio-tutorial system in biology used by all students in course | Dr. D. A. Dunbar<br>Asst. Dean | None |
| 13. | Junior College District of St. Louis County<br>7508 Forsyth Boulevard<br>Clayton, Missouri 63105 | Seven programs similar to the three listed above have also been developed by this District | Phil D. Carlock<br>Asst. Coordinator | Write for printed abstract of instructional innovations |
| COLLEGE |  |  |  |  |
| 14. | Audiovisual Center<br>University of Connecticut<br>Storrs, Connecticut 06268 | Self-instructional laboratory (12 carrels) to teach operation of audio-visual equipment and preparation of teacher-made materials | Dr. Carlton Erickson<br>Director | See AV Instruction, September 1965, pp. 564-5 |
| 15. | Instructional Media Center<br>Michigan State University<br>East Lansing, Michigan | Consultation with faculty members in various departments regarding instructional improvement. Development of instructional systems for various courses. Similar programs at Syracuse, Colorado and San Francisco State | Dr. John Barson | Write for literature |

# CONCERNS OF DELEGATES TO THE THIRTEENTH LAKE OKOBOJI EDUCATIONAL MEDIA LEADERSHIP CONFERENCE

August 20-24, 1967

These are the concerns sent in by delegates to the Okoboji Conference. They will be distributed at the conference and used by the Planning Committee and perhaps help formulate the discussions.

## SYSTEMS, AUTOMATION AND THE FUTURE OF EDUCATIONAL MEDIA

1. GORDON BLANK

A. Much is written in journals and much is said at meetings about activities involving so-called systems approaches to education and instruction. Permit me to suggest that the bulk of the activity labeled such by self-acclamation at many educational institutions, is at best, wishful thinking, or perhaps more accurately, characterized by very superficial and embryonic attempts. The truly significant activity that is occurring is localized at but a handful of educational institutions. What can be done so as to enable the rank and file of educational institutions, who have little or no significant involvement with educational systems engineering, to keep pace with the small vanguard, which, comparatively speaking, is "way out." I suspect that the innovational gap between the few "have" institutions and the many "have not" institutions will increase as time progresses, unless major and sustained efforts are made to enable the bush league to bootstrap itself into the major league. What can be done to close the gap so as to enable the "educationally unwashed" to bathe in the waters of apparent sophistication?

B. There are probably as many interpretations of "systems" and "educational automation" as there are educational institutions. We in education occasionally tend to bandy about terms without really knowing what we are talking about. When we use these terms, precisely what do we mean?

C. I have heard the question expressed, "How long can an excellent annual convention hold a field together?" I infer from this that the educational media field is more and more trending into a loose aggregation of separate interest groups, each of which is characterized by its own particular brand of specialization, its own educational axe to grind, etc. The long-sought-after discipline of whatever it is we call the field, be it audiovisual, instructional technology, or media (or whatever else it is), is in need of some sort of unifying thread. Is educational systems engineering (whatever that is) the thread, or is this another tangential splinter-group?

2. CHARLES G. BOLLMANN

A. When involved in the "system approach," the Media Specialist sometimes seems also to assume the roles of:

1. Learning Psychologist
2. Curriculum Expert
3. Evaluation Specialist

Is this true?
Should this be true?
If not, where does the Media Specialist fit and what is his appropriate function?

B. "Systems" (borrowed from SYSTEMS ANALYSIS) seems to connote precision in planning. Traditionally, the Media Specialist has made intuitive decisions.

Does the Media Specialist now possess the tools and information which he needs to make precise judgments in the application of media?

What are these tools?
How can they be sharpened and best used?

## 3. RICHARD J. BOUTELLE

As an audiovisual intern in a new elementary school materials center I have a great interest in the "systems" approach to subject matter fields or specific courses within these areas. I feel that this approach has particular significance in schools such as ours that are using either the "cooperative" or "team-teaching" approach to public school education.

The design of an efficient or effective system in terms of the desired output involves the concerted efforts of many highly skilled and well-qualified persons.

1. How must the role of materials center personnel change?
2. Do we have valid testing devices to determine the necessary input and output?
3. Who within the school system assumes the responsibility for the construction and administration of post and pretests?
4. Is the audiovisual person in the schools today qualified for his involvement in the "systems" approach without further training?
5. Will curriculum development courses become a part of the training of an audiovisual specialist?
6. Does our testing or evaluation take into consideration such vital factors as the ability of the classroom teacher and the environment created by the teacher in the classroom?
7. Must the "systems" approach be adopted throughout the entire elementary or secondary curriculum if pretesting is to provide valid evaluative data?
8. Is it possible, as some authors have stated, to reach a point in our system development when revision is no longer necessary?
9. Is the "systems" approach better adapted to the higher levels of education than to the elementary level?
10. Is it possible to obtain information in regard to the USOE-supported investigation at MSU of the place of media in instructional systems?
11. Does the development of systems stimulate greater concern in creating new media or more effective use of that which is available to us at this time?

Education in the past has been characterized by great duplication of research efforts and the results of this research have seldom reached the classroom teacher in such form that it is readily understandable by the teacher. Is it at all feasible to pass along ideas on media usage which have proven to be particularly effective in order that much of the trial-and-error might be eliminated by developing systems for one's own particular use? It would seem that there could be a more efficient means for disseminating ideas than to incorporate them in articles written in the professional journals.

What is the significance of automation in light of the function of the materials center personnel? This point is of particular importance to me in my present position.

4. PAUL J. BRUCKER

A. "Inherent in the systems approach is the notion that every aspect of the whole system, both human and non-human, is to be examined, developed, and fitted together into an efficient, easily operated whole. The systems approach is in sharp contrast to the traditional educational approach which has proceeded on the assumption that if one provides the people that they will be able independently and repeatedly to invent the necessary things required for a learning process." (Winfield, 1961)

(1) My concern here is whether or not educators, i.e., teacher and administrators, are going to be willing to give up this traditional approach to organization.
(2) What is the criterion for determining what schools or what area of the curriculum or what part of a course, etc. should be systematized?

B. What is the role of the audiovisual specialist in a system? What is his responsibility during the planning stage? If there is to be a team approach, is there a special formula which can be applied which would indicate the special backgrounds and experiences of people needed to develop a system?

C. How do we alleviate the all too prevalent view among educators that applications of technology will mechanize and dehumanize education?

D. Technology has been advancing at such a rapid rate that past predictions of future developments have been five to ten years behind. How can we as educators better predict the demands that will be made upon education in the future and whether technology will have the capabilities of meeting these demands?

E. Obsolescence--theoretically, when a system component becomes obsolete, the entire system is affected. Will the mere replacement of the system component be sufficient?

F. What steps can be taken to build flexibility into a system?

G. The true development of a workable system is an expensive proposition. What steps may be taken to reduce the cost in order that institutions without government grants may be encouraged to develop their own systems?

5. ALBERT A. CANFIELD

By what means can validly determine the feasibility of implementing the technological developments now available?

What role conflicts or modifications must be resolved to facilitate wider and more general acceptance of instructional systems?

What, if anything, needs to be accomplished with the teacher-training institutions to facilitate their aggressive pursuit of innovation and modification of the conventional lecture/textbook approach?

How do we accumulate media, validity data with differing objectives, students, and environments using experimental designs or techniques?

What actions can/should be taken to intensify the Federal support of instructional research?

## 6. PHILIP D. CARLOCK

When we discuss systems and automation and educational media, the method of presentation and the analysis of instruction is important, however, most important is the individual student and how he learns from the various methods.

Another concern is the personnel required to enable instructors to meet the demand for more instructional resource materials. The local production and selection of material for classroom instruction is necessary. The personnel must be available to help with the organization and utilization of material for the proposed systems in education.

We must evaluate the contribution of each sub-part of a system to the "total system" approach before we can assume that the system/automation process is best.

It has been my experience that instructors today are "looking for a better way." The role of instructor is taking a different course in terms of concepts, materials, and use of media. The instructor is personally analyzing the content of material that is being presented. We, as educational media specialists, must provide the facility planning, service, equipment, and materials that are needed to give the student and instructor complete access to instructional resources. To help to summarize my concern I want to suggest we solve the objectives of systems, automation, and media by trying the Lasswell formula. (Who, says what, to whom, how, and with what effect?)

## 7. RUTH R. CORNFIELD

As director of an Educational Media Institute recently held at Seton Hall University, I was confronted by many problems which became my concerns and which I would like to discuss with the delegates at this conference.

The Institute at Seton Hall University was directed at a subject matter group - college level teachers of the Chinese language. Consequently some very specific problems emerged which do not usually come to the surface where instruction of utilization of media is not so precisely determined. It served to highlight the conditions under which some college teachers perform. It also pointed up the climate in which the media specialist operates in many institutes of higher learning and in which he is trying to come to some decision about how to effect some kind of systems approach for and with his faculty.

Problem I - It became apparent very early in the institute that none of the participants had had any education courses and that very few of them had any notion of which methods, procedures and techniques to employ for instruction of a second language to American students. How can one emphasize utilization of media to enhance instruction in any discipline where there is no or little knowledge of the instructional processes?

Problem II - The majority of the participants knew nothing about any of the media, even the simplest. The filmstrip, the transparency and the opaque projector were brand new to most of them. How could one hope to discuss a systems approach with such instructors without first giving them a complete and intensive course in the role, function and utilization of educational media. How can one get such a course instituted for one's own faculty?

Problem III - A systems approach is costly. Most departments would hesitate to invest large sums unless they could be sure that the materials and equipment would serve for many years to come. Does not this, therefore, run the risk of jelling together a course which will withstand all new ideas and materials which may come along subsequently?

Problem IV - A systems approach should tend to free instructors from many of the routine instructional tasks and thereby give him time for developing the software necessary for further incorporation in a system. In my experience I have found very few teachers who possess the skill and know-how for successful program-making. This, after all, depends on the knowledges I discuss in Problem I. Does not this situation, then, throw the gauntlet to industry? In essence, then will it not be industry which will determine how the various disciplines will be taught and, in effect, what will be taught?

8. CARL D. COTTINGHAM

A. Systems: At last we are beginning to think in terms of behavioral objectives! For some reason many educators have not realized the importance of stating specific objectives. This is bringing about very worthwhile results such as curriculum evaluation and revision; and, more related to the media file, more critical requirements for materials and methods.

Problems related to systems approach:
(1) Lack of research and knowledge in instruction by audio tape teaching.
(2) Vagueness in using copyrighted materials (printed and nonprinted).
(3) Knowing what is "worth" teaching.

B. Automation: The human element of finding capable people to prepare software and to put the program into effective operation.

C. Future of Educational Media:
(1) Goal for future should be intelligent use of media by teachers in day-to-day classroom or outside activities.
(2) Successful future depends upon our careful appraisal of new media followed by testing on the practical level.
(3) Media personnel must get more involved in the curriculum by setting up communication channels with those who say what is taught.

9. ESTHER M. DAHL

A. The human element:

> "At the San Diego DAVI Convention in 1966 John Barson of Michigan State University said: It is far more difficult to symbolize a developmental system when we deal with those that treat the human condition. Some find it difficult to agree on the end products. Likewise, a system for developing instruction and the role of media in the system cannot be easily analyzed or designed."

My concerns in the mechanization of instruction are:
(1) Is the worth, integrity and importance of the individual being considered? What is happening to the self-image?
(2) Is the importance of efficiency becoming the prime factor?

B. The role of industry:
In an article "The Educational Significance of Industrial Diversification" by Phil Lange and Paul Witt in the June-July 1966 issue of Audio Visual Instruction mention was made regarding systems and the role of industry.

> "Where was the Cornucopia of instructional materials and prepackaged ready-made instruction and finger-tip control of two-way communication systems and quality-control feed-back research and subsystems of a 'total system' of education? In short, where were the goods to make the grand system for Great Society operative? Where would they come from? No single school could afford to make them. So who would deliver them? Robert Slaughter's answer was clear and forceful: Soon industry would deliver the goods."

My concern relative to this is, will industry then control the curriculum? Will finances be made available for education to provide for all these systems? I have seen smaller districts who have installed federally sponsored systems who have not been able to afford to continue these "on their own."

C. Qualifications of media specialists:
Robert Heinich of University of Southern California made several conclusions to his DAVI presentation at San Diego. Stressing the importance of credentials, he said:

> "The media specialist should be credentialed at the curriculum planning level as interpreted in this presentation -- the same level credential as the curriculum director. As experts in the mediation of instruction, we must participate at the curriculum planning level, influencing decisions in regard to choices of instructional tactics."

10. MARVIN DAWSON

A. An honest appraisal of the maturity of the "Systems" technology. It seems to me that the technical capabilities are not as well-developed as the promotional claims.
B. An assessment of the impact of large corporate mergers, i.e. General Learning, on the acceptance of the systems approach by both public and private sectors of society.
C. A thoughtful look at the relationship between "National Curriculum" (including evaluation) and the systems approach.

11. BURNETT E. ELLIS

With a perusal of the literature on the systems approach to education, it becomes obvious that a system could be worked out for any institution if the will, the funds, and the cooperation exist. Methods can be devised, machines can be perfected, and materials acquired or developed; but we are still dealing with people, people who have been trying to do the best job they could all along.

Therefore two of my three concerns are for the human elements.
In developing the system:
(1) Can we preserve the unique approach of each teacher to his subject?
(2) Can we avoid the overlap of courses without sacrificing the integration of disciplines?
After the system is initiated:
(3) Can the teacher, the media supervisor, and the administrator each find his proper place in the system? Can the teacher greatly increase one part of his former activity while delegating much of what he did before to the system? Can he disagree with some of the new ways of doing things and still avoid sabotaging the system? Can the media supervisor keep the "machine" running smoothly and keep up with increased demands for services and materials? Can he keep his colleagues convinced of the importance of his advice and service after the specifications have been drawn up and the "bugs" have been worked out of the system? Can the administrator delegate functions to the "machinery" of the system without sacrificing control of activities for which he is responsible? Can he understand the system well enough to neither assume the prerogative of the teacher or media specialist, nor tolerate conditions that should be changed? Can the teacher, the media supervisor, and the administrator avoid overstepping authority or over-delegating responsibility? If this is difficult for the people who worked out the system, what will it be like for the person who comes into the situation a year or so later?

12. LESTER C. ESSIG

A. What will be the responsibilities of the Instructional Media Specialists in relation to System Development and Automation?
B. What will be the impact of Systems and Automation on the Teaching-Learning Process and practices:
    (1) on growth and development of the learner (student)?
    (2) on the teacher and the role of the teacher?
    (3) on the curriculum?
    (4) on building design and facilities?
    (5) on administrative policies and decisions?
C. What will be the effect of Systems Design and Automation on the future of Educational Media?
D. What will be the impact of Systems and Automation on Teacher Education in both college pre-service and in-service training?
E. What is involved in Systems Development and Automation of the Teaching-Learning Process. In other words, what are the steps and procedures?

13. ROBERT A. FISCHER, JR.

Operationally-stated objectives may be the sine qua non of evaluation, feedback, and systems adaptation or revision, but the need for the refinement of evaluative instruments seems evident. When so much is at stake, should the objective evaluation of systems, which is so vital to their continuing improvement and acceptance, be determined by the application of the "available" instruments or should more specific, appropriate and accurate tools be developed?

How are the attitudes and skills required to work with new systems developed in teachers who have been trained under what is predominantly a lecture system? There seems to be a serious and wide-spread need for the development of systems for the inservice-training of teachers.

C-A-I, D-A-I-R-S, etc. will require larger amounts and different sources for the financing of education. Who will control the public school curriculum in the future?

As more instructional tasks are assigned to media, what are the implications about the nature of the learner? What will be the role of the teacher? Can we identify the uniquely human tasks the teacher should be performing?

Do "built-in" systems discourage change? If so, do such set-ups consequently discourage the kinds of evaluation that might indicate the need for their adaptation or scrapping?

What are the staffing requirements implicit in various systems? Guidelines might be developed for the selection of such personnel. The desirability of early selection and involvement at the planning stage of properly-trained-media-oriented personnel with technological know-how should be stressed.

There seems to be a need for the identification of models of and/or for systems development. Information of the "how-to" variety, with specifics related to the above and other such concerns, might be more effective than generalities, abstractions and schematic diagrams.

14. VERNON GERLACH

A. The fiscal abundance which has come to education confronts today's schoolmen with a new responsibility: How can we use funds wisely? Specifically, how can a systems approach help educators who face the series of hard decisions regarding how to select modifications and innovations which warrant the increased financial resources currently available?

B. All educational changes essentially involve change in ends or changes in means. How can the systems approach aid the educator in implementing change in each of these areas?

15. ROBERT GERLETTI

A. Can the ideas, processes we have, be financed over the long haul? No matter how simple or complex an operating system is, how can it be financed under present tax structures?
B. Will Boards of Education authorize necessary expenditures for systems analysis?
C. Can workable models, generalized from actual practice, be made available to all school districts?
D. Mass media are being used to do many things for which they are not suitable. What can be done about this?
E. Why should we automate when there may be less expensive ways to do the job?
F. What are the effects of automation on personal relations and on the attitudes of people towards their work?
G. Purchase of a lot of hardware -- no program.

16. ORVILLE L. GRISSO

Assuming that the increased use of technology and applications of the media to education do make the learning process more efficient, then

1. Are those involved in such applications also involving themselves in the problems of applying this increased "learning" to more meaningful experiences for the learners or has there been a separation of learning from applications?
2. What are the implications of applied technology in terms of mechanical devices for the learner as a human being when he now responds to a machine rather than interacts with human beings for a part of his learning experience?

3. Is there an element of dehumanization of knowledge, and if so, is not this an assumption of the nature of knowledge which may not be acceptable to a part of the intellectual community?
4. In our concern to make education more efficient, are we not possibly overlooking the greater cultural problem of technological unemployment at the higher levels? It may be that we need to slow down the educative process rather than speed it up. Does not the new media present the opportunity and challenge for education in depth as well as/or rather than efficiency? What's the rush anyway?
5. The technological gap appears to continue to become greater as immediate applications are shunted aside for new techniques so that items are outdated before they are marketed. Does not the industry have some social responsibility for reducing this cultural lag before it pushes beyond the understanding of all but those directly involved? Unless there are efforts on a wide scale to reduce the gap, are we not in danger of having a "mass" society directed by the gadgets and their technicians? 1984, here we are!
6. Are those involved in applying various forms of the media sufficiently involved in the philosophical ramifications so that they can give a sense of direction or are items being marketed and used simply because they are new without consideration of curriculum influences and the total social-cultural perspective? Maybe we ought to ask ourselves, "Why are we doing what we are doing?"
7. Have teachers been sufficiently prepared to apply the new technology in terms of the purposes of education, or are they becoming technicians and appliers of the technology to purposes not understood by themselves or the society which they supposedly serve?
8. Is it possible that as the student responds, he may become another "cog in the wheel" so that while responses may be adequate or "correct" he does not understand either the material or what is happening to him as a responsible human being?
9. Can we honestly say that knowledge in any subject is sufficiently complete that it may be incorporated into a system to be promulgated as such through any automated process?

### 17. DAVID V. GUERIN

No one can quarrel with the idea that it is a good thing to have objectives (yes, behavioral objectives) or that it is a good idea carefully to identify design and organize the interrelating components of an educational system to maximize the achievement of the educational (i. e., learning) objectives.

What one must be concerned with is the notion that somehow the same kind of specificity and rigor with which systems analysis and systems development can be and is carried out under the designation "operations research" in industry and in the armed forces is totally transferrable to public or private formal education. Whether you think it is or it isn't depends in large part on your philosophy of education. You see, the systems approach like a lot of things in education is not new. What is new is the belief that it can be applied with far greater rigor than it has heretofore. We often have the thing without the label. This rigor, it appears, depends almost entirely on setting what are known as observable measurable behavioral objectives.... We can be rigorous, in short, if we can observe and measure. One can hardly quarrel with that either. It is quite advantageous to be able to evaluate readily and it is very clear that education has much to gain by sharpening its focus, and thereby, sharpening its implementing methodologies and materials. But, we must be quite concerned, it seems to me, that the "systems approach" (i. e., the new very rigorous systems approach) doesn't start to say to us something which no good scientist would say, namely, that if it is not measurable it doesn't exist... or that if it is not measurable, we don't teach it. We need to see many specific examples of "systems" before we form opinions but from some of the samples I have seen of combinations of behavioral objectives, one could easily be misled into believing that a succession of nuts and bolts behaviors makes a good engineer or doctor or lawyer, etc. The whole is greater, often much greater, than the sum of its parts, and this difference is perhaps due to the "unmeasurables".

I think we also need to be concerned (despite the risk of inviting such teeth-pulling phrases as "quickly triggered humanistic defenses") about what we said in the DAVI Task Force Position Paper: The Function of Media in the Public Schools, namely that "our primary concern is and must be the individual human personality." There is no reason why the above concern (which, curiously enough, is not stated behaviorally) and the systems approach should be incompatible. They certainly aren't incompatible under the other less rigorous systems approach. However, the problem in dealing with individual human personality is the term "individual". This calls for flexibility in the system and there's the rub--the more flexible the system gets, the greater the difficulty in being rigorous.

This raises another possible concern. Where the systems approach does not refer to a total school program (which, of course, could allow for flexibility) but to a systems package (i. e., a commercial product) then the danger of losing sight of the individual personality is greater. These so-called macro-systems have been described as "go-no-go" systems meaning you use the whole package as is or not at all. This suggests that the designer of the package has somehow acquired the unique ability to make the universal suit with perhaps an extra pair of pants for flexibility or even an extra suit just in case. I have seen "packages" being used where the teacher worked with her eyes alternately on the material and on her wrist watch and who could afford no diversions, no matter how germain they might be to the main topic. These systems were well programed, but they were too tightly programed allowing little or no room for unstructured creativity--everything had to be structured even the creativity, such is the genius of package designing.

It is one of the ironies of life that formal structure can both advance and impede creative thinking (and creative teaching). You know, they used to tell us, and still do, that we must use media, not be used by it. The same can be said about systems produced for mass market--whether with or without a handful of branching programs.

The good in systems we all can see, but this letter is about "concerns". Let us hope the operations researchers and the systems designers share these concerns. Then perhaps we can be a little less concerned.

18. GEORGE L. HALL

A. I am concerned that many educators, including media specialists, tend to limit dysfunctionally the very concept of "instructional systems" by restricting (a) the inputs to those relatively obvious ones which directly comprehend media hardware, facilities and personnel and (b) the outputs to those effects which are easily discerned as resulting directly from media operations. This pernicious practice denigrates the essential values of the systems concept by fragmenting anew the holism of the instructional process which really constitutes the sine qua non of the systems approach. In short, we must stop mistaking our media sub-systems for the whole instructional-systems in which they are but important functioning parts. Our primary concern must be for the learner--not the "teaching aids".

B. I am concerned that educators not make the mistake with media automation which they made earlier with simple mediation, namely that new technology should be sharply limited in its instructional applications because of its threatening to force substantial changes in the traditional (sacrosanct) roles of the classroom teacher. While this overly protective attitude toward the classroom teacher may retard the inevitable impact of the technology, it cannot stall it to the gradualizing snail's pace apparently wished for in certain conservative circles. Instead, this foolhardy procrastination (and abdication of professional responsibility) may have the quite undesirable effect of turning full development of the new media technologies over to "non-educator" educators who might by default become "the wave of the future". Educators, including classroom teachers, need to face up to the realities of their position vis-a-vis technology (especially including automation). Averting the eyes and wishful thinking will get us nowhere but into trouble and disappointment. Americans today - and tomorrow - must learn more things, more efficiently. Pumping in larger quantities of traditional inputs (like time, teachers and spaces) will not raise the output to adequately high levels. Technological inputs (considered broadly as behavioristic, media-based systems incorporating automated elements) are necessary to accomplish the task.

19. JAMES W. HARDIE

Problem areas:

1. How do we go about developing programs designed to prepare persons to be qualified for leadership responsibilities dealing with systems approaches and automation, in the quantity and quality that will be needed?
2. Are developments moving fast enough to warrant crash programs of some sort in training educationally oriented persons for leadership roles?
3. What kind of timetable for these developments can be anticipated?
4. Is it possible to identify the problems a school district, college, or university might be expected to face and overcome as they move towards major innovative changes of implementing systems planning and automation in their program?

5. Is it possible to introduce systems approaches to learning in steps and stages into school programs, or does the entire system need to be overhauled in order to assure success?
6. What are the potential dangers to which moving into systems applications and automation might lead in education?
7. What are the potential benefits that might be expected from educational programs fully developed from a systems approach and utilizing automation to maximum benefit? How would you describe such a system?

## 20. HAROLD E. HILL

General Concern -- is education already in danger of becoming too "automated and systematized"? Are we beginning to lose some of the personal contact between the teacher and students which is considered by many to be vital to learning?

"Calling the Tune" -- in view of the above mentioned possible danger, it is imperative that any systematized approach to education be molded to the needs of education and not be imposed upon any facet of the educational process.

Teacher Acceptance -- innovation is slow to come and difficult to bring about in education, and this is partially due to the ineptitude on the part of many administrators in "selling" innovative approaches to education to their faculties. If the systems approach to education is to work, complete cooperation at all levels is essential.

Unified Development -- there is always the danger that any "system" plan may concentrate on a few media, or limited application. Any plan for systems approach or automation would naturally include the interconnection of certain "locations". Such plans for interconnection should include the "normal" media, a complete communications system which would lend itself more readily to the systems approach to the use of media in education.

Copyright -- cannot be ignored as we begin to see more automation, more interconnection, etc., in the educational media field. This could be a serious consideration.

## 21. LT COLONEL HOWARD B. HITCHENS, JR.

A. Most anyone can define a system "a complex of components which have been assembled into an organized entity for a purpose." We have always had "systems" -- and there is nothing new in using the concept as a way of looking at education. Haven't good educational administrators always weighed several alternatives before reaching decisions? Haven't the successful educators always manipulated the components of the "system" consciously or not, in a manner similar to that advocated by systems analysts? So what's all the shouting about?

B. How much "scientific method" can the art of teaching, or the process of learning (a very human activity with which we are concerned) stand? Many operations researchers with whom I have discussed this preoccupation with systems admit that only a few of the techniques which presently exist have direct application to education and the instructional process. Maybe we should adopt the technique of good, hard-headed weighing of all the known factors bearing on each educational decision before we make it--and let it go at that!

C. One impression I have from all the discussion of systematizing education and, in particular, instruction, is that somehow electronics is the miracle drug which will really make us finally efficient! The technology which has been the bed-rock indicator of progress in the United States to the rest of the world--the application of natural science knowledge--is only part of the knowledge which we must apply before we can hope to make a truly manageable process of learning. Let's assess where we are in applying the other side of technology. Are we really using our knowledge of human behavior to arrive at a systematized process? It is in the area of the social sciences that we must bring our techniques to bear, I believe.

The advocates of applying reinforcement theory (which was perhaps wrenched prematurely from the womb of learning psychology), claim to be able to control human behavior. Of course, our associates who have drunk of the magical electronic data processing technology (and are inebriated therefrom), claim all sorts of innovative powers: to wit, "the computer has all sorts of advantages beyond being a very rapid, electronic page turner for presenting programed learning sequences. It can teach students and relieve human teachers of much tedium. Etc, etc."

At our institution there has arisen considerable confusion between programming for the computer (translating information into a language the electronic machine can manipulate) and programing for human learners (arranging the environment so that students can learn more efficiently and effectively). This confusion must be eliminated before we can progress.

D. My final concern is that we may be overleaping the necessary interim steps in media use, and trying to introduce very advanced technology prematurely. For instance, while we are still struggling mightly to find the rightful place,and function of programed learning (and the so-called teaching machine) in education, many are advocating the use of extremely sophisticated machines with humans for learning. I don't feel we should discourage even the wildest dreamers among us; but let's not lose sight of the vitally important work of exploiting the most rudimentary communication media for learning, which still remains to be done.

One of the most exciting research notions I have come across is that of trying to develop a strategy for making intelligent media decisions in the educational process which Briggs et al have investigated in Pittsburgh.

## 22. FRED KNIRK

A. What are the components of instructional systems (as opposed to educational or personnel administration or other "systems")?
   (1) What are the input measures to these instructional systems (student time expended, cost of the system(s) to the tax-payers, teacher times, entering student behavior and abilities, and learning style)?
   (2) What are the relevant output measures (the degree of accomplishment of the objectives in a unit of time? other?)?

B. How can we translate educational goals into behaviorally measured objectives, into instructional materials and then into an effective evaluation program?

C. How can instructional systems design be oriented specifically to individualized instruction?

D. How can this systems orientation be incorporated into introductory methods courses for pre-service teachers? Or where should this concept be taught? In Instructional Technology classes?
   (1) What will the teacher roles be in various types of instructional systems?
   (2) What will the student activities be in the various instructional situations?
   (3) Should most of the materials, or instructional components, be mass produced to reduce the "cost per evaluated unit"? What should teachers know about evaluating their student needs and instructional components?
   (4) Is it desirable, and if yes, how can information on the systems concept best be disseminated?

## 23. LEONE H. LAKE

A. In applying the systems approach what steps are being taken to apply computer science to the total system:
   (1) Regarding processing school information?
   (2) Regarding the instructional process?
   (3) Regarding the cost financially for some small and large school systems to change to this relatively new approach?
   (4) Regarding the designers of the system?

With the above in mind do educators, boards of education, research and machine specialists have a thorough knowledge and understanding of the totals systems approach? There seems to be a similarity in this respect; poor communication and lack of understanding concerning a cooperative working relationship between these people, same as still often exists with architects and planners regarding learning space not involving administrators, teachers and others who ultimately implement the instructional program.

B. What is the teachers role in the systems approach:
   (1) What are the objectives and understandings in educational change?
   (2) What are the understandings in curriculum change?
   (3) What are the understandings in instructional change?

James E. Russell states we have not learned yet how to understand what change is or what it does. The world is changing in a radical fashion, so much as to challenge our concept of what education really is. "The rational powers of the human mind are playing an expanding role in modern life; they are basic to individual dignity, human progress, and national survival; to help every individual develop these powers is therefore a profoundly important objective and one which increases in importance with the passage of time." "The modern age is posing new challenges to educators which require new responses." "Our children will look with eyes different from ours and they will see something different. It will be a new vision of what a human being might become. There is no doubt that man will do many things of which we have not yet dreamed, but the instrument that will propel our children into this new age is the human mind. Our children are headed for the new age, and it is our duty... and privilege, to help them get there." (Ref: James E. Russell, Change and Challenge in American Education, Houghton Mifflin Company)

The above statements are the central insights for philosophical revolution in education and applicable to instructional system design. These are insights about which we should be most concerned.

24. PAUL L. McCLENDON

A. What are the effects upon the professor who re-structures his courses to utilize a systems approach?
B. Is it inevitable that "software" lags behind the "hardware"?
C. Is the lag between software and hardware greater at the college and university level? If so, what factors account for this and what may be done to narrow the gap?
D. What are the major institutional problems in re-orienting changing to a systems approach?
E. What are some possible negative effects of grants upon the future of educational media?
F. What are some of the "hidden" effects of implementing a systems approach within an educational institution, such as motivational changes in faculty and students, cooperation within and among departments, institutional esprit-de-corps?
G. Is a favorable increase in the quantity of material successfully mastered as evidenced by criteria tests an infallible indicator of a proportional increase in its use by the individual?
H. Are national repositories of media materials the best answer to supply the media needs of our schools?
I. Should educators be taking any further steps in any areas to convey their media needs and potentials to industry as a guidance and expediting process?
J. What may be the most productive directions for automation to take to most favorably enhance the proper future of educational media?
K. Do leaders in media have any responsibility for safeguarding the integration of human personality against some fragmentizing and dehumanizing trends within contemporary educational philosophy and practice?
L. How can the Okoboji Media Conference results be made to have a more widespread influence?

25. CHARLES McCULLOUGH

A. Can electronic data processing be used effectively in developing and grouping reference instructional materials to produce a workable index of instructional materials? (Not necessarily a book-type catalog.)
B. Can this data processing system be tooled in such a way that users may make requests and have these requests confirmed automatically via television?
C. Can a data processing system effectively handle the normal booking and confirmation requirements of a materials center when orders are fed to the machine by a operator at the center?

D. What is the maximum capacity of electronic data processing described in letter C? For example--5000 items/500 teachers; 10,000 items/500 teachers; 50,000 items/500 teachers and possibly several regional media libraries tied into one complex computer.

E. Could "master teachers" from several different school districts make up a team of curriculum leaders and through a sophisticated communication system be directly responsible for the educational program in a large region? I do not refer to consultants or coordinators, but to master teachers leading the instructional program with younger or less experienced teachers assisting them.

26. DONALD L. NICHOLAS

My greatest concern relative to Systems, Automation, and the Future of Educational Media is in terms of finding qualified personnel to provide the needed leadership in the development of "Systems" and the application of automation techniques to education. It seems to me that the existing "media programs", both on the masters and doctoral levels, are failing to prepare media people with the competencies needed to establish "instructional systems"--or even to operate effectively in such systems.

Another concern, implied in the above, is that of the role of the media specialist--in "Systems, Automation, and the Future of Educational Media". Again, it seems to me that the approach most often used in the training of media people is quite traditional. Much more should be done in terms of preparing media people for a unique role--that of assisting instructional personnel in the use of media to solve teaching-learning problems.

27. R. STAFFORD NORTH

A. The first concern is that there is not now enough attention given to the relationship between systems and automation. There are places where it seems that the preparation of some automated presentation is given a high priority without its being made a part of a complete re-thinking of the learning which is desired as the outcome. Perhaps it is necessary that we go through such a phase of "using a projector" or "making tapes" or "using television", but, hopefully, we will learn that the most effective use of these media comes only when we have built a system for teaching certain goals and have utilized each medium in a way which maximizes its contribution to those seeking to learn.

B. A second concern is that not enough attention has been given to the unique contribution which each medium is able to make when incorporated into a system's approach. What is the special value of having students face to face in a small group? What are the particular values to be gained when a speaker speaks to a large group of students? Are there certain types of ideas or responses which can best utilize a visual medium or an audio medium? In sum, what specific contribution does each medium have to make to a learning system?

C. There is a considerable difficulty in sharing material used in various media. One can understand the reluctance of publishers to be the basis for this sharing until things have proved their worth. At the same time, this means that many different colleges and universities are working on very similar materials investing large amounts of money in their preparation with no adequate means of sharing these materials. Perhaps this conference can assist by making suggestions on how information can be made available so that various institutions can know what might be available elsewhere or how those interested in the same item can perhaps encourage its publication. In this particular concern, I am not so interested in "complete courses" that might be shared between institutions but in those smaller segments from which a teacher may wish to build various aspects of the course which still would be uniquely his own.

28. BRUCE R. OLDERSHAW

A. We have been moving rapidly into a highly sophisticated instructional era in the United States. We have been urged to sell these programs on the local level. Yet, very little is done to prepare elementary and secondary school teachers for the use of such programs. They have just learned to properly use language laboratories, programmed learning, and educational television. Now we are introducing computer instruction and like programs that are far more complex. What are we going to do to prepare teachers for use of these more complex programs? Is in-service training adequate? If not, at what level should this training be provided?

B. Research and development seems to be excellent in the media area. However, it appears that local acceptance of media programs and media specialists is somewhat slower (at least in New England). It is evident that we should put more emphasis on selling the importance of media programs to the local school systems. What more can we do at the national and state level to gain wider acceptance of our programs? Research and development seems to be such a waste when acceptance does not follow at the local level.

C. The further we go in the development of systems and automation of instruction the more we increase the cost. Is it not our responsibility to seek sources of funds for the support of these programs? It would seem unrealistic to turn our backs on the cost factor of implementing new programs. At the present, it is possible to get federal funding for the first few who implement a new program. Those who apply later are told that they do not qualify because their programs cannot be classified as "innovative". Many school systems cannot or will not implement new programs without outside financial aid. What should be done to get general federal aid for updating instruction at the local level?

29. JOHN F. PAYNE

A. Under what conditions will the systems approach do a real instructional job for students and not just be a showplace for visiting dignitaries?
B. What change in philosophy will teachers need to use these media effectively?
C. How will mediated self-instruction change the role of the teacher?
D. Will mediated self-instruction necessitate that a teacher spend more of his college time in subject matter areas and less in broad educational areas?

30. DONALD G. POTTER

The Future of Educational Media:
(1) The introduction of computer and related technology in education will result in perpetual obsolescence of professional competencies.
(2) Individual educators will become increasingly dependent upon support systems... individual initiative will be redirected towards imaginative use of prepared instructional components and creative use of information systems.
(3) More responsibility will be placed upon the individual student for his own education. Pupil demands will increase with regard to both scope and specificity of education.
(4) The use of new methods and techniques in teaching will result in a modification of professional roles and expectations.
(5) Increased efficiency will result in increased competition among students and educators.

These items generally describe the trend toward a systems development in education. This approach is logical and promises to be very effective. The need for adequately programmed materials at all levels of education cannot be denied. The following statements express my concerns with regard to the implementation of such a program.

TOO MUCH EMPHASIS ON MACHINES--A great amount of attention is being given to the development of rather sophisticated machine-orientated educational systems. Too little effort is being made to prepare effective programs for use in them. Expensive equipment without effective programs is worthless.
PROGRAM DEVELOPMENT--How can we develop an effective force of educational programmers?
PRE AND IN-SERVICE TRAINING NEEDS--How shall we train inservice and prospective professional educators? Before the use of machine systems is in common usage, all directly involved in the teaching process will have to be trained to use these systems effectively.
TECHNICIAN TRAINING--How will we train media technicians, whom we will need to help design, install and maintain complex machine systems in education.
FINANCING--Can an effective plan for adequate financial support be developed?

31. ROBERT M. SEKERAK

A. The "systems approach" has become a meaningless cliche because the term has been applied to too many irrelevant applications.

B. "Systems" have been developed to give an appearance of order to activity which is in itself meaningless, wasteful and outmoded.

C. To create a system within a large structure without modifying the structure to accommodate the new procedure is only perpetuating the state of inadequacy in which we find ourselves.

D. We appear to be applying industrial methods to human beings, thus giving rise to the feeling of distrust and concern throughout the educational community.

E. To date, there has been no effort to deal with the entire process of automation and technology in its largest sense. The magnitude of the task is beyond any one person or select group of persons. Okoboji should address itself to the total education process and should include all of the equipment, the accompanying procedures, facilities, schedules, maintenance, materials and personnel required to produce the intended results.

F. Only a gathering of the type and quality of the Okoboji Conference could bring together and begin to develop inter-relationships among the media and their uses.

   (1) How does the individual teacher relate to ERIC, NICEM, DAIRS, TV Satellites and the computer?

   (2) What is the effect of automation on small group devices such as projection and recording equipment?

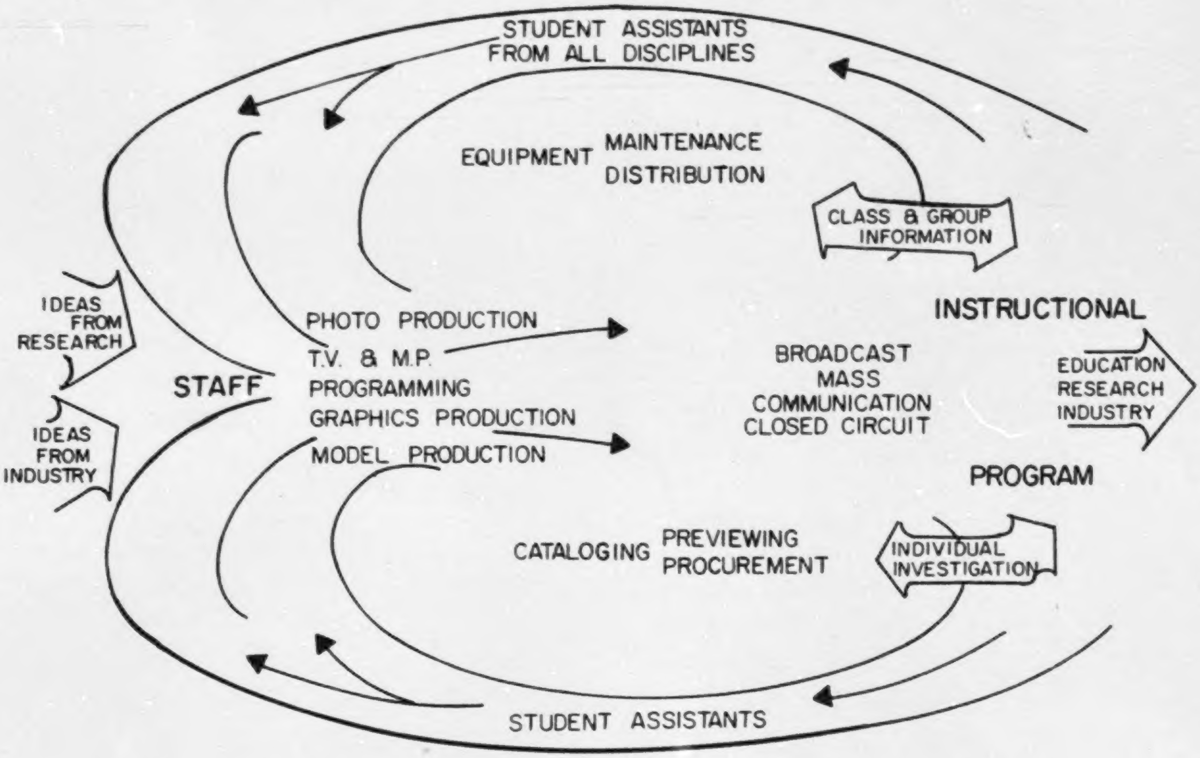
   (3) Is there a formula for the relationship between films and TV programs of all types?

   (4) Do we build in rigidity with large capital investments?

   (5) Is there really any way that an individual teacher can have a voice in technological developments?

G. My final concern is that this truly national body will get bogged down in the type of detail a smaller group could deal with and not speak to the larger questions.

BASIC COMMUNICATION "SYSTEM" FOR EDUCATION


STUDENT ASSISTANTS
FROM ALL DISCIPLINES
EQUIPMENT
MAINTENANCE
DISTRIBUTION
CLASS & GROUP
INFORMATION
IDEAS
FROM
RESEARCH
PHOTO PRODUCTION
INSTRUCTIONAL
T.V. & M.P.
PROGRAMMING
GRAPHICS PRODUCTION
MODEL PRODUCTION
STAFF
BROADCAST
MASS
COMMUNICATION
CLOSED CIRCUIT
EDUCATION
RESEARCH
INDUSTRY
IDEAS
FROM
INDUSTRY
PROGRAM
CATALOGING
PREVIEWING
PROCUREMENT
INDIVIDUAL
INVESTIGATION
STUDENT ASSISTANTS

There is general agreement that learning is strongly related to the degree of participation of the learner. It is the hypothesis of this writer that automation and technology make possible a major change in the approaches of the educational process. By the combined efforts of teachers and students in assisting in the preparation of software for automated instruction, the personal aspects of education are preserved and the mastery of man over technology is maintained.

The preceding diagram is submitted as a possible discussion topic during the conference.

32. J. A. SHAW

A. Is there a problem of "jumping on the bandwagon" in the sense that the systems terminology, and perhaps a few of the techniques of operations research can be used to justify the adoption of sophisticated hardware to carry instructional messages from a traditional course structure?

B. Educational systems seem to be developing on a "piecemeal" basis. Where are we going to find the large number of specialists needed to make the necessary changes in the shortest period of time?

C. Will audiovisual specialists be replaced by a new breed of educational engineers recruited from other disciplines?

D. The present trends seem to indicate that instructional hardware is being developed and introduced more rapidly than the materials to be used in the devices. There is also a lack of standards in such areas as cartridge systems, 8mm formats, sound track types and positions, and videotape compatability. Can the DAVI take a strong stand and develop policy concerning acceptable standards on an industry-wide basis, or encourage the pooling of patents?

Can the DAVI institute a sub-agency to issue a certifying label to be affixed to all A-V equipment stating that the item conforms to DAVI specifications of compatability and performance for that class of equipment?

Can the DAVI discourage manufactures from rushing the release of new equipment until such a time that producers can have an adequate stock of materials to use with the device?
The present situation can inhibit systems development, by either causing wasteful investment in "last year's" equipment and materials or encouraging some to delay implementation in order to wait for "next year's" development.

E. The mergers of electronics and communication firms with publishers and materials producers will eventually lead to more packaged instructional systems.

How can the audiovisual specialist be prepared for the pressures that will be exerted by the large prestigious commercial organizations to promote their systems, especially if "field-tested" claims are made?

With the present difficulties in establishing standards for individual equipment and material items, how will a commercially developed system involving texts, hardware, and other materials be evaluated before adoption?

F. A very personal concern relates to the use of a broad range of materials and techniques in adult education. If continuing education is as important as current pronouncements by educational leaders would have it seem, where will audiovisual specialists receive training to enter this field?

How can we prepare the adult population for the effects of automation and the increase in leisure time?

A-V specialists attached to university extension departments do not appear to be concerned with the task of encouraging the use of newer media in informal adult education programs. There seems to be a lack of involvement in the affairs of the National University Extension Association and other adult education groups.

A review of adult education publications does not indicate much activity relating to the use of the newer media, except for some uses of radio and television and programed instruction in basic literacy training.

What about systems development to meet adult needs and designed for equipment that can be used with small groups or for individual home study?

### 33. RICHARD A. STOWE

A. How can models of educational systems be most effectively designed and tested? (May I suggest that one session of the Conference be devoted to "brainstorming" one or more such systems into existence?)

B. Who is to do this job? At what level(s)? With what resources? How are audiovisual personnel to relate to others--say, curriculum specialists--who are also exploring this field?

C. Given the evolvement of one or more tested models, what will be the function of automation within them?

D. How could promising models most readily be diffused into the existing educational structure? How is adoption to be secured? What changes in personnel, facilities, and administrative and financial patterns are implicit in the systems approach?

E. How is the transition to be made? How can compatibility of early and later sub-system be insured? More realistically, how can incompatibility be minimized?

F. How are implemented systems to be given intensive, on-going evaluation? How are the results of such evaluation to be reported out precisely, concisely, and yet inclusively?

### 34. PEGGY SULLIVAN

Are we in danger of establishing another hierarchy within school systems when we have not yet fully utilized the hierarchy of administration which we have? I am referring, of course, to the possibility that a systems approach to instruction may seem to require more new specialists at the administrative level rather than tooling up the educational media specialists we already have, and who may have much more awareness of the individual learner, the teaching process, and the goals of education. We may diminish their impact and influence just at the time when it is most needed to absorb what is new from automation, etc., and to adapt it most successfully to the plans of the school's instruction.

For reasons of economy (and potent reasons they are) the use of computers, etc., may begin as an adjunct to a business office or fiscal operation. This may mean that justification of use will always have to be measured in terms of the "first supplier", and that possible uses for instructional programs may never be justified if the justification must be couched in the terms of the business office.

### 35. H. E. THORNE

A. What has been the history of Educational Media in states that have divided into Intermediate Units? Strengths? Weaknesses?

B. What production facilities should be available to a Media Specialist involved in an operation serving 145,000 students?

C. In order to assist school districts and the individual teachers, what is being done to dissimulate research findings in Educational Media?

### 36. JOHN A. TIRRELL

A. Concerning Systems

The following is a nine-step rationale for learning materials development:

(1) Identify the mission of the educational organization (what to teach?)
(2) Define the target population (to whom?)
(3) Subdivide educational goals into tasks
(4) Prepare behavioral objectives for each task identified
(5) Identify the types of learning for each objective cluster (re: Gagne, The Conditions of Learning)
(6) Prepare criterion tests (how well?)
(7) Select appropriate media for each instructional sequence (considering cost/effectiveness) (how?)
(8) Organize material content
(9) Test, revise and validate materials

Items 1 - 4, 6, 8 and 9, although difficult and time consuming, are possible within 'the state of the art'. Item 5 is difficult since we know so little about how learning really occurs. Item 7 is difficult since the selection of tools is inadequate as a function of Item 5.

B. Concerning Automation

Computer technology will make extraordinary contributions to the process of learning and its automation. A digital computer is a switching device that can control media as well as being a medium of instruction. There are seven areas of contribution for learning that involve the computer. They are: problem solving, presentation of information, dialogue, generative analysis, individually prescribed instruction, record keeping, and information retrieval. Some of the above areas involve not only instruction but involve tools for adequate management of the instructional or learning process. As versatile as the computer may be, it will be effective only if its use is governed by careful consideration of the objectives and all possible media choices applicable. The computer has not created a panacea for learning, but it is a powerful tool that must be used wisely.

C. Concerning the Future of Educational Media

Paul Saettler in the AV Communication Review, Summer 1967, states: "Relatively little substantial progress has been made toward providing adequate solutions to the whole set of problems involving what to teach, to whom, and how... Unless this problem is recognized and solved, instructional technology may be unable to cope with the educational challenge of the present or future." The future of educational media must come to grips with the "how" in Saettler's statement. We must find a set of characteristics for each medium and mix of media so that in the development and utilization of learning materials we can select the appropriate medium (or mix of media) for each learning sequence. We must determine the trade-offs of using a single medium or multi-media.

37. JOHN P. VERGIS

Educators and public regard "systems" with mixed feelings. Some view the concept with a religious fervor. To them it promises a more efficient education for more children. Others see systems as the last step toward a complete dehumanization of the instructional process.

Of course, no one wants an instructional system with the zero freedom of a machine. Neither do they want a system, either, that turns out highly unpredictable products and that falls to pieces when any one of its parts breaks down and proves to be irreplaceable in kind.

In view of current and future educational problems, more than a happy medium, a central point on the continuum is required. However, in order to mass technological innovations into systems so they help produce the best product, some instructional freedom must be sacrificed. The question is how much and how soon?

Educators should appraise their situations and provide their own answers. Speed is essential because an opportunity for making a free choice in deciding the future of their own decision making already is rapidly decreasing. Technicians today are designing instructional hardware that has the ability to shape not only systems of utilization but subject matter as well. Television is a case in point. It is an excellent example of how a medium can become the message.

At the moment, therefore, it seems that the question of whether or not instruction should be systematized is secondary to the big problem of who should do it and how should it be done.

The requirements of a systems engineer or analyst are rigorous. So much so that few, if any, people in education can qualify.

Writing on "Control Systems" in Automatic Control, Brown and Campbell describe what they call the new type of middle management man:

> "A systems engineer cannot be trained by simply adding together the old specialities. What is wanted is not a jack-of-all-trades, but a master of a new trade, and this will require a new synthesis of studies. It will call for advanced work in the fields of mathematics, physics, chemistry, measurements, communications, electronics, servomechanisms, energy conversion, thermodynamics, and computational techniques." They go on to say, "It may sound

> as if what is being described is a technician. He is not; he is the new "universal" man. Our educational systems have not been organized to produce such men since the Renaissance, and there were precious few of them then. We are not talking about a man who can program a machine--we are talking about a man who uses the most advanced intellectual tools of his time to an[illegible]e his business, political, or social environment so profoundly that it can be programmed."

Although Brown and Campbell are describing a systems "engineer", their apt observations apply to the field of education as well.

If media specialists are serious in their desire to perfect their "systems" skills they must take advantage of every opportunity to do so. If they do not, they may find themselves in the deplorable state described in the computer issue of the Kaiser Aluminum News.

> "And so, after this long discourse, we sit here in our Sopwith Camel at the landing field, waiting to fly another 'Dawn Patrol' against the hated Red Baron. The mechanic who was supposed to wind up our propeller overslept and as we await his technological approach, we turn the whiskers on our crystal set and pick up a voice. It says, 'It's A-OK up here. All systems green and go. Roger and out.' The voice comes from an astronaut 400 miles above the earth, traveling at 17,000 m.p.h., 'Man, we'll be lucky to make it to the end of the runway!' "